United States Department of Agriculture

NRCS Natural Resources Conservation Service

Washington
Water Supply Outlook Report
March 1, 2014

Olympic National Park volunteers Mandy Holmgren and Jamie Michel ski up the Deer Park Road to measure Deer Park snow course, 2/25/2014. Photo by Bill Baccus, ONP.

Water Supply Outlook Reports
and
Federal - State – Private Cooperative Snow Surveys

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How forecasts are made

Most of the annual streamflow in the western United States originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Measurements of snow water equivalent at selected manual snow courses and automated SNOTEL sites, along with precipitation, antecedent streamflow, and indices of the El Niño / Southern Oscillation are used in computerized statistical and simulation models to prepare runoff forecasts. These forecasts are coordinated between hydrologists in the Natural Resources Conservation Service and the National Weather Service. Unless otherwise specified, all forecasts are for flows that would occur naturally without any upstream influences.

Forecasts of any kind, of course, are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge of future weather conditions, (2) uncertainty in the forecasting procedure, and (3) errors in the data. The forecast, therefore, must be interpreted not as a single value but rather as a range of values with specific probabilities of occurrence. The middle of the range is expressed by the 50% exceedance probability forecast, for which there is a 50% chance that the actual flow will be above, and a 50% chance that the actual flow will be below, this value. To describe the expected range around this 50% value, four other forecasts are provided, two smaller values (90% and 70% exceedance probability) and two larger values (30%, and 10% exceedance probability). For example, there is a 90% chance that the actual flow will be more than the 90% exceedance probability forecast. The others can be interpreted similarly.

The wider the spread among these values, the more uncertain the forecast. As the season progresses, forecasts become more accurate, primarily because a greater portion of the future weather conditions become known; this is reflected by a narrowing of the range around the 50% exceedance probability forecast. Users should take this uncertainty into consideration when making operational decisions by selecting forecasts corresponding to the level of risk they are willing to assume about the amount of water to be expected. If users anticipate receiving a lesser supply of water, or if they wish to increase their chances of having an adequate supply of water for their operations, they may want to base their decisions on the 90% or 70% exceedance probability forecasts, or something in between. On the other hand, if users are concerned about receiving too much water (for example, threat of flooding), they may want to base their decisions on the 30% or 10% exceedance probability forecasts, or something in between. Regardless of the forecast value users choose for operations, they should be prepared to deal with either more or less water. (Users should remember that even if the 90% exceedance probability forecast is used, there is still a 10% chance of receiving less than this amount.) By using the exceedance probability information, users can easily determine the chances of receiving more or less water.

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General Outlook

Whether it was the 12th man or not we'll never be sure but with 2-3 time's normal snowfall and the passes being closed numerous times last month we have nearly reached normal snowpack in Washington. Well above average precipitation along with cooler than normal temperatures brought much needed relief to not only the mountain snowpack but also soil moisture in the valleys. Forecasts for spring and summer runoff have increased considerably over last month as well. Unfortunately too much of a good thing can also lead to problems such as traffic jams, high avalanche danger, localized flooding and landslides. Short term weather forecasts indicate a higher probability of above normal temperatures and below normal precipitation however there are several storms now approaching the state for the next several days. Long term predictions from the Climate Prediction Center also indicate a chance of above normal temperatures but uncertainty on precipitation.

Snowpack

The March 1 statewide SNOTEL readings were 89% of normal but vary across the state. Moses Mountain within the Omak River drainage reported the lowest levels at 45% of normal Readings from the Pend Orielle, including Idaho and Montana data, reported the highest at 122% of normal. Westside medians from SNOTEL, and March 1 snow surveys, included the North Puget Sound river basins with 103% of normal, the Central and South Puget river basins with 94%, and the Lewis-Cowlitz basins with 84% of normal. Snowpack along the east slopes of the Cascade Mountains included the Yakima and Wenatchee areas with 92%. Snowpack in the Spokane River Basin stood at 100% and the Walla Walla River Basin had 85% of the long term median.

BASIN	PERCENT OF LAST YEAR	PERCENT OF AVERAGE
Spokane	113	100
Newman Lake	83	78
Pend Oreille	138	122
Okanogan	82	89
Methow	86	90
Conconully Lake	44	54
Central Columbia	103	92
Upper Yakima	96	97
Lower Yakima	96	88
Ahtanum Creek	89	86
Walla Walla	100	85
Lower Snake	122	100
Cowlitz	77	103
Lewis	48	66
White	76	105
Green	70	75
Puyallup	74	101
Cedar	70	91
Snoqualmie	69	96
Skykomish	65	93
Skagit	101	107
Nooksack	76	99
Olympic Peninsula	52	77

Precipitation

In a complete reversal of the whole water year to date March brought lots of rain to all parts of the state. Basin precipitation amounts were pretty even throughout the state with a low of 124% in the Pend Oreille to a high of 195% in the Central Columbia, however water-year averages remained below normal at 58-95%. The wettest spot in the state was reported at June Lake SNOTEL in the Lewis River Basin with a February accumulation of 23.4 inches, or 134% of average. The highest percent of average was at Sourdough Gulch SNOTEL near Asotin which received 367% of average precipitation. Of course Sourdough Gulch is a rather dry location which would normally only muster .90 inches in February so a few good storms add up fast.

RIVER BASIN	FEBRUARY PERCENT OF AVERAGE	WATER YEAR PERCENT OF AVERAGE
Spokane	127	77
Pend Oreille	124	73
Upper Columbia	176	71
Central Columbia	195	77
Upper Yakima	192	83
Lower Yakima	173	78
Walla Walla	161	95
Lower Snake	161	90
Lower Columbia	145	74
South Puget Sound	172	90
Central Puget Sound	161	88
North Puget Sound	163	75
Olympic Peninsula	159	58

Reservoir

Seasonal reservoir levels in Washington can vary greatly due to specific watershed management practices required in preparation for irrigation season, fisheries management, power generation, municipal demands and flood control. For the most part reservoir store remained pretty static from last month. Reservoir storage in the Yakima Basin was 487,000-acre feet, 108% of average for the Upper Reaches and 159,000-acre feet or 116% of average for Rimrock and Bumping Lakes. The power generation reservoirs included the following: Coeur d'Alene Lake, 70,000 acre feet, 53% of average and 29% of capacity; and the Skagit River reservoirs at 54% of average and 32% of capacity. Recent climate impacts and management procedures may affect these numbers on a daily or weekly basis.

BASIN	PERCENT OF CAPACITY	CURRENT STORAGE AS PERCENT OF AVERAGE
Spokane	29	53
Pend Oreille	38	74
Upper Columbia	89	106
Central Columbia		
Upper Yakima	58	108
Lower Yakima	69	116
Lower Snake	68	100
North Puget Sound	32	54

For more information contact your local Natural Resources Conservation Service office.

Streamflow

Forecasts vary from 65% of average for the Colville River at Kettle Falls to 124% of average for the Okanogan River at Malott. April-September forecasts for some Western Washington streams include the Cedar River near Cedar Falls, 99%; White River, 103%; and Skagit River, 104%. Some Eastern Washington streams include the Yakima River near Parker, 94%: Wenatchee River at Plain, 80% and Spokane River near Post Falls, 99%. Volumetric forecasts are developed using current, historic and average snowpack, precipitation and streamflow data collected and coordinated by organizations cooperating with NRCS. Caution should be used when using early season forecasts for critical water resource management decisions.

BASIN	PERCENT OF AVERAGE FORECAST (50 PERCENT CHANCE OF EXCEEDENCE)
Spokane	72-99
Pend Oreille	73-117
Upper Columbia	65-124
Central Columbia	80-100
Upper Yakima	92-98
Lower Yakima	80-100
Walla Walla	93-94
Lower Snake	84-120
Lower Columbia	83-100
South Puget Sound	88-103
Central Puget Sound	96-109
North Puget Sound	97-104
Olympic Peninsula	90-91

STREAM	PERCENT OF AVERAGE FEBRUARY RUNOFF
Pend Oreille at Albeni Fall Dam	65
Kettle at Laurier	68
Columbia at Birchbank	70
Spokane at Spokane	53
Similkameen at Nighthawk	97
Okanogan at Tonasket	101
Methow at Pateros	88
Chelan at Chelan	74
Wenatchee at Pashastin	62
Cle Elum near Roslyn	59
Yakima at Parker	52
Naches at Naches	49
Grande Ronde at Troy	118
Snake below Lower Granite Dam	72
Columbia River at The Dalles	79
Cowlitz below Mayfield Dam	115
Skagit at Concrete	69
Dungeness near Sequim	65

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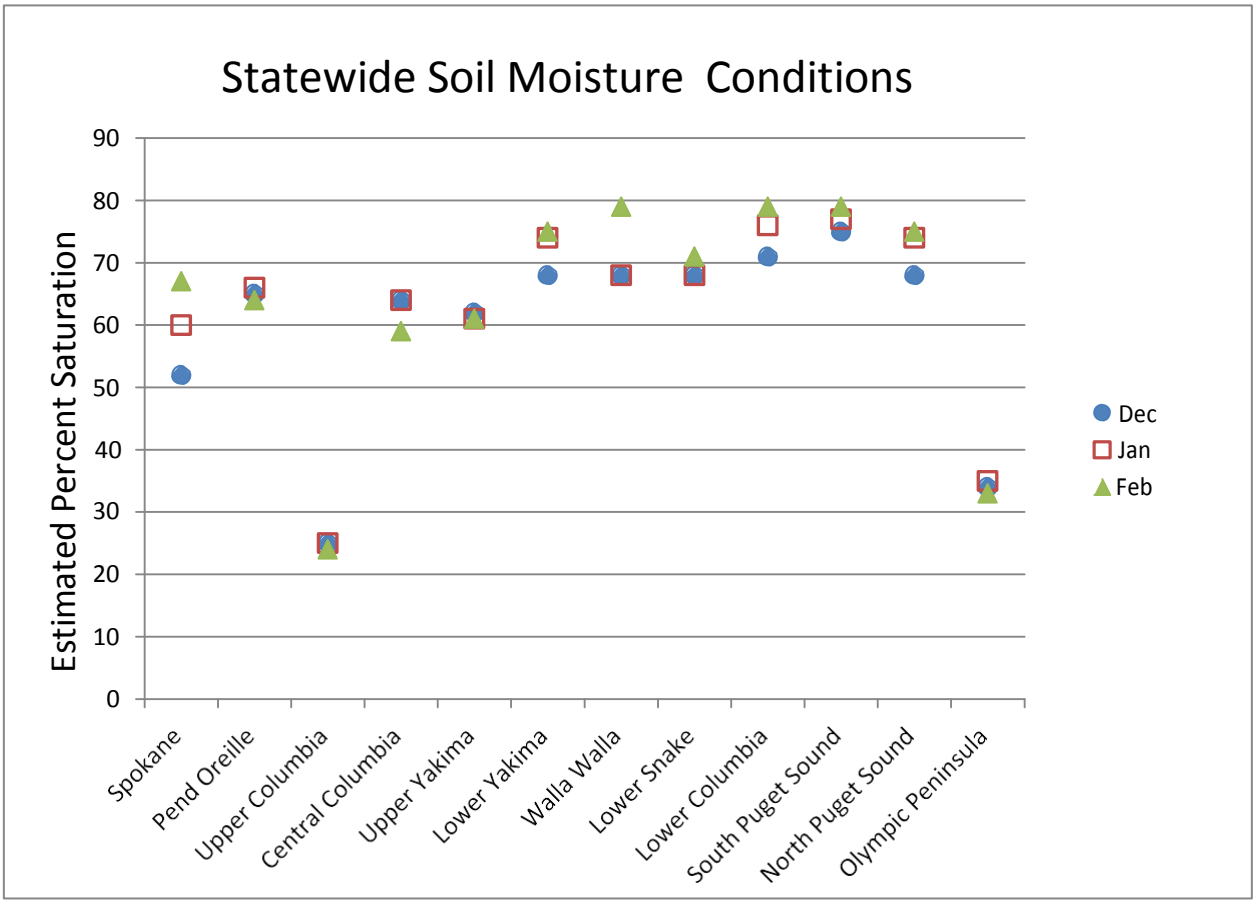
Soil Moisture

Current soil moisture data is available from a limited number of SNOTEL sites scattered throughout each basin. As the effort continues to install additional sensors and more years of data are acquired this information will become invaluable to the streamflow forecasting community. Light fall precipitation created drier than optimal soil moisture conditions coming into winter. Not good news with the current state of mountain snowpack. Much more snow will be needed to make up for any soil moisture deficits.

BASIN	ESTIMATED PERCENT SATURATION
Spokane	67
Pend Oreille	64
Upper Columbia	24
Central Columbia	59
Upper Yakima	61
Lower Yakima	75
Walla Walla	79
Lower Snake	71
Lower Columbia	79
South Puget Sound	79
Central Puget Sound	N/A
North Puget Sound	75
Olympic Peninsula	33



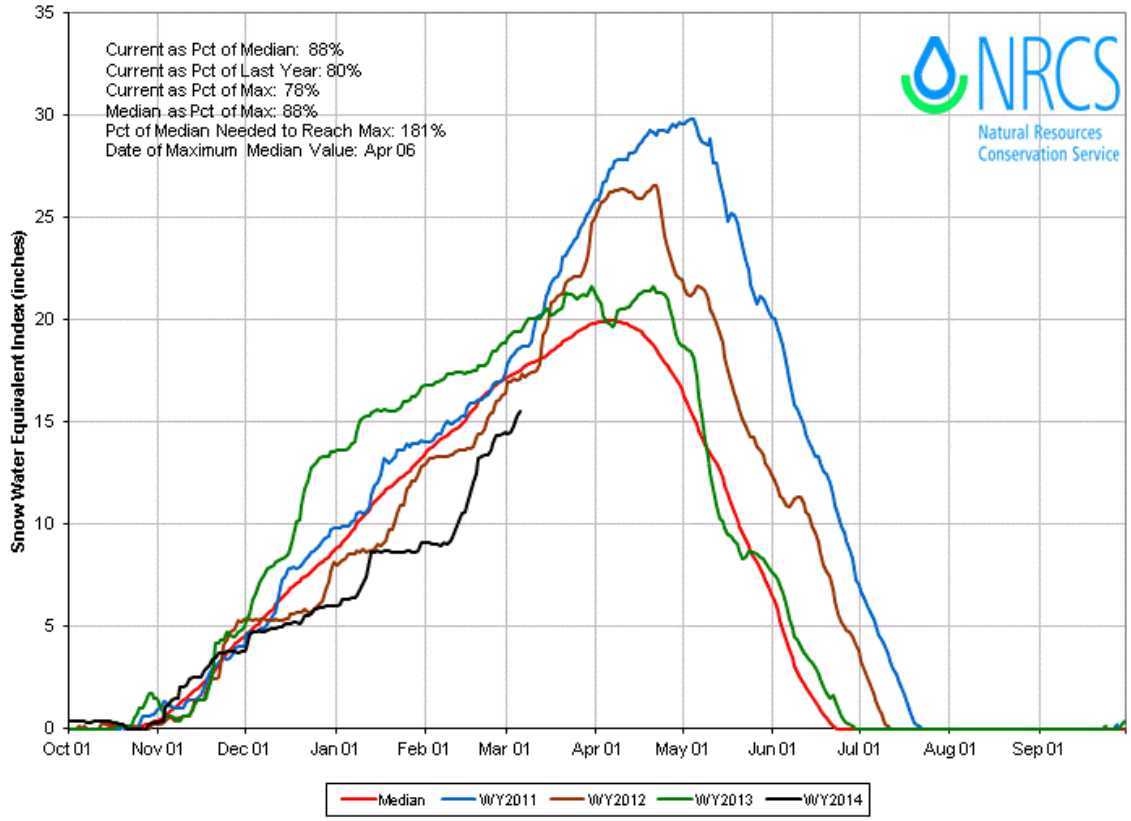
BASIN SUMMARY OF SNOW COURSE DATA

MARCH 2014

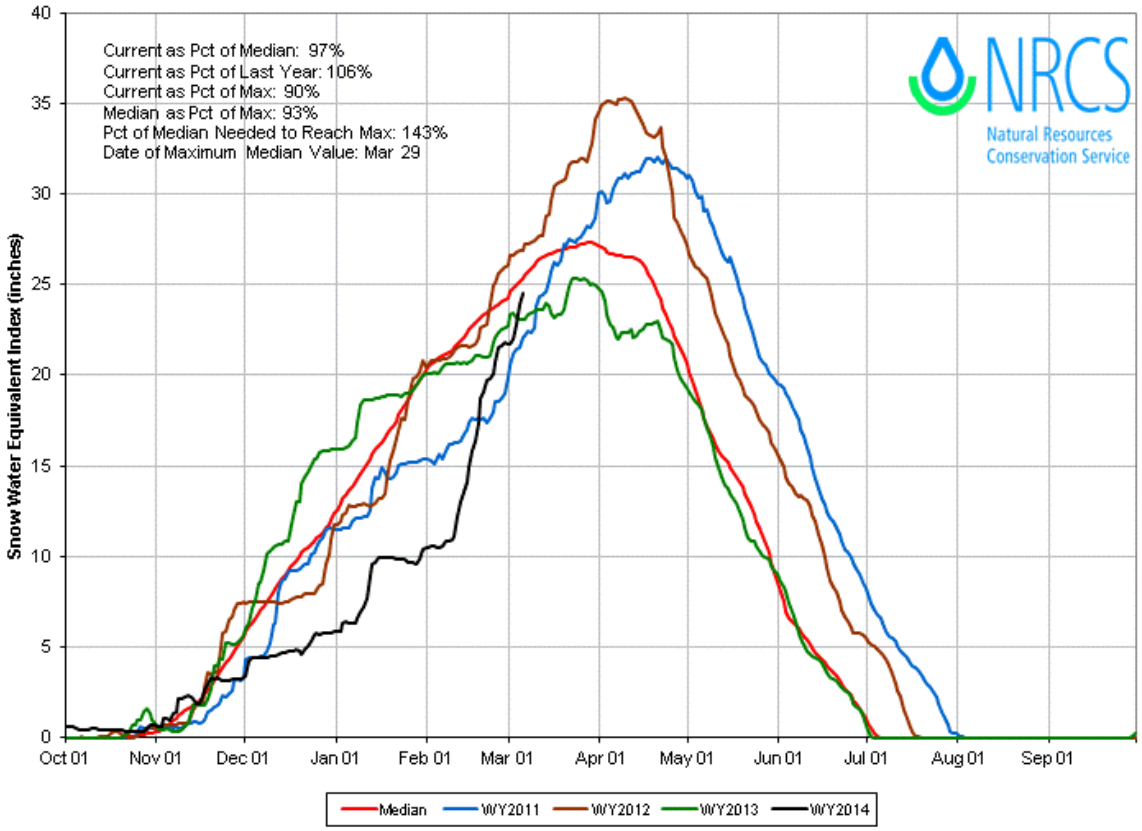
SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1971-00
ABERDEEN LAKE CAN.	4000	2/26/14	28	6.5	5.6	5.7
ALPINE MEADOWS	3500	2/28/14	87	29.0	51.0	31.5
ALPINE MEADOWS SNTL	3500	3/01/14	87	37.5	67.1	40.3
ASHLEY DIVIDE	4820	2/27/14	31	6.7	2.4	5.3
BADGER PASS SNOTEL	6900	3/01/14	89	30.8	26.3	23.7
BAIRD #2	3220	2/27/14	27	4.7	5.2	7.9
BAREE MIDWAY	4600	2/25/14	90	25.6	20.7	23.6
BAREE TRAIL	3800	2/25/14	40	9.0	6.8	7.8
BARKER LAKES SNOTEL	8250	3/01/14	67	15.3	10.3	10.3
BARNES CREEK CAN.	5320	2/25/14	58	16.9	16.5	17.3
BASIN CREEK SNOTEL	7180	3/01/14	44	10.0	5.0	5.5
BEAVER CREEK TRAIL	2200	3/01/14	42	11.4	12.9	11.2
BEAVER PASS	3680	3/01/14	64	20.4	32.0	22.6
BEAVER PASS SNOTEL	3630	3/01/14	97	27.2	39.6	27.8
BIG WHITE MTN CAN.	5510	2/27/14	51	14.5	17.0	16.8
BLACK MOUNTAIN	7750	2/26/14	50	10.9	9.1	11.0
BLACK PINE SNOTEL	7100	3/01/14	55	13.3	7.2	8.2
BLACKWALL PILL CAN.	6370	3/01/14	98	29.7	23.4	30.0
BLEWETT PASS#2SNOTEL	4240	3/01/14	48	13.1	12.2	14.7
BONAUPART SOUTH	4660	2/28/14	16	2.4	5.7	--
BRENDA MINE CAN.	4450	2/27/14	35	9.0	7.9	11.3
BROOKMERE CAN.	3000	2/28/14	25	5.5	6.8	7.6
BROWN TOP AM	6000	2/28/14	137	70.2	43.1	48.8
BROWNS PASS		2/26/14	17	3.9	4.9	--
BRUSH CREEK TIMBER	5000	2/26/14	57	16.4	10.0	6.3
BUCKINGHORSE SNOTEL	4870	3/01/14	83	29.4	59.4	--
BULL MOUNTAIN	6600	2/27/14	28	6.0	5.4	4.8
BUMPING LAKE (NEW)	3400	3/03/14	55	12.6	14.1	14.9
BUMPING RIDGE SNOTEL	4610	3/01/14	78	21.9	21.6	22.7
BUNCHGRASS MDWSNOTEL	5000	3/01/14	72	18.6	20.1	22.5
BURNT MOUNTAIN PIL	4170	3/01/14	39	13.3	21.6	15.1
BUTTERMILK BUTTE	5250	2/26/14	46	10.0	12.6	--
CALAMITY SNOTEL	2500	3/01/14	1	.3	4.5	--
CARMI CAN.	4100	2/26/14	20	3.6	5.2	5.8
CAYUSE PASS SNOTEL	5240	3/01/14	112	34.6	53.6	--
CHESSMAN RESERVOIR	6200	2/26/14	37	7.7	4.9	2.8
CHEWALAH #2	4930	2/26/14	46	11.0	15.5	15.3
CHICKEN CREEK	4060	2/26/14	60	17.1	11.8	12.8
CITY CABIN	2390	2/28/14	33	10.9	13.4	8.8
COLD CREEK STRIP	6020	2/25/14	32	5.8	10.5	7.5
COMBINATION SNOTEL	5600	3/01/14	35	7.0	3.7	4.1
COPPER BOTTOM SNOTEL	5200	3/01/14	40	9.1	3.4	--
COPPER MOUNTAIN	7700	4/24/14	41	9.1	7.8	8.0
CORRAL PASS SNOTEL	5800	3/01/14	85	28.6	28.4	28.7
COUGAR MTN. SNOTEL	3200	3/01/14	32	10.3	23.0	15.2
COX VALLEY	4500	2/24/14	76	20.3	33.0	30.7
DALY CREEK SNOTEL	5780	3/01/14	59	13.5	8.2	8.4
DEER PARK	5200	2/26/14	39	11.7	22.7	11.7
DEVILS PARK	5900	2/28/14	121	36.4	31.1	35.2
DISAUTEL PASS		2/26/14	18	3.8	6.8	--
DISCOVERY BASIN	7050	3/04/14	44	10.5	6.8	7.4
DIX HILL	6400	3/02/14	49	12.0	6.6	8.2
DOMMERIE FLATS	2200	2/27/14	29	9.2	2.9	6.8
DUNCAN RIDGE	5370	2/25/14	23	3.8	7.0	5.4
DUNGENESS SNOTEL	4010	3/01/14	24	8.6	12.6	5.9
EL DORADO MINE	7800	2/23/14	47	11.8	7.2	12.9
ELBOW LAKE SNOTEL	3200	3/01/14	74	27.0	44.5	32.4
EMERY CREEK SNOTEL	4350	3/01/14	49	15.0	12.1	12.5
ENDERBY CAN.	5800	2/28/14	94	32.2	40.9	33.8
ESPERON CK. UP CAN.	5050	2/25/14	38	10.6	14.1	14.6
FARRON CAN.	4000	2/27/14	36	9.2	10.0	11.3
FISH LAKE	3370	2/27/14	100	29.4	24.2	27.6
FISH LAKE SNOTEL	3430	3/01/14	86	25.2	24.3	26.7
FLATTOP MTN SNOTEL	6300	3/01/14	115	36.8	39.1	33.8
FLEECER RIDGE	7500	2/27/14	48	11.1	7.7	7.7
FOURTH OF JULY SUM	3200	3/01/14	---	7.3	9.0	8.5
FREEZEOUT CK. TRAIL	3500	3/01/14	38	10.0E	9.7	10.4
FROHNER MDWS SNOTEL	6480	3/01/14	54	10.8	5.8	5.9
GOAT CREEK	3600	2/27/14	20	3.6	5.5	5.9
GOLD MTN LOOKOUT		2/28/14	33	7.3	14.7	--
GRAVE CRK SNOTEL	4300	3/01/14	57	16.1	12.0	13.5
GREEN LAKE SNOTEL	5920	3/01/14	68	20.4	21.2	18.2
GREYBACK RES CAN.	4700	2/26/14	34	8.6	8.7	7.8
GRIFFIN CR DIVIDE	5150	2/26/14	45	10.7	7.3	8.1
GROUSE CAMP SNOTEL	5390	3/01/14	53	17.3	16.1	17.4
HAMILTON HILL CAN.	4550	2/27/14	45	10.7	8.4	12.7
HAND CREEK SNOTEL	5030	3/01/14	50	11.8	7.0	9.5
HARTS PASS SNOTEL	6490	3/01/14	104	34.5	38.1	33.7
HARTS PASS	6500	2/28/14	113	33.0	36.2	32.6
HELL ROARING DIVIDE	5770	2/26/14	78	25.9	20.6	23.9
HERRIG JUNCTION	4850	2/26/14	72	23.1	15.7	21.2
HIGH RIDGE SNOTEL	4920	3/01/14	55	18.1	18.0	21.4
HOLBROOK	4530	3/02/14	42	10.0	5.2	7.6
HOODOO BASIN SNOTEL	6050	3/01/14	129	37.3	29.9	32.3
HUCKLEBERRY SNOTEL	2250	3/01/14	9	3.0	5.3	1.5
HUMBOLDT GLCH SNOTEL	4250	3/01/14	59	16.2	9.1	9.8
HURRICANE	4500	3/01/14	25	8.0	22.6	12.0
- INDIAN ROCK SNOTEL	5360	3/01/14	51	17.8	26.1	--
IRENE'S CAMP	5530	2/26/14	39	7.2	8.4	7.9
ISINTOK LAKE CAN.	5100	2/27/14	30	5.3	6.0	6.5
JUNE LAKE SNOTEL	3440	3/01/14	59	19.6	50.9	36.3
KELLER RIDGE	3700	2/24/14	14	2.7	4.7	--
KLESILKWA CAN.	3450	2/28/14	40	9.8	10.6	10.5
KRAFT CREEK SNOTEL	4750	3/01/14	68	19.6	9.3	--
LAMB BUTTE		2/27/14	53	13.0	14.8	--
LIGHTNING LAKE CAN.	3700	3/01/14	40	9.7	9.7	10.3
LOGAN CREEK	4300	2/26/14	35	7.9	4.4	5.5
LOLO PASS SNOTEL	5240	3/01/14	102	29.5	18.5	22.9
LONE PINE SNOTEL	3930	3/01/14	60	18.6	47.9	28.1
LOOKOUT SNOTEL	5140	3/01/14	82	23.7	19.1	24.5
LOST HORSE MTN CAN.	6300	2/28/14	40	10.0	8.7	8.0
LOST HORSE SNOTEL	5120	3/01/14	45	10.2	13.3	17.5
LOST LAKE SNOTEL	6110	3/01/14	132	44.9	32.6	43.7
LOST LAKE	4070	2/28/14	21	3.7	6.7	--
LOUP LOUP CAMPGROUND		2/27/14	24	4.4	9.7	--
LOWER SANDS CREEK #2	3120	2/26/14	55	16.2	15.4	16.2
LUBRECHT FOREST NO 3	5450	2/27/14	38	7.9	2.9	4.4
LUBRECHT FOREST NO 4	4650	2/27/14	23	4.3	1.5	2.1
LUBRECHT FOREST NO 6	4040	2/27/14	36	7.3	2.8	2.7
LUBRECHT HYDROPLOT	4200	2/27/14	34	7.3	2.5	4.1
LUBRECHT SNOTEL	4680	3/01/14	39	8.1	3.3	4.7
LYMAN LAKE SNOTEL	5980	3/01/14	138	40.3	47.5	48.6
LYNN LAKE SNOTEL	3900	3/01/14	51	16.9	31.9	--
MARIAS PASS	5250	2/25/14	56	15.5	12.7	13.1
MARTEN RIDGE SNOTEL	3520	3/01/14	105	39.6	66.9	--
MAZAMA		2/27/14	45	9.4	6.1	--
MCCULLOCH CAN.	4200	2/28/14	29	6.2	7.1	6.2
MEADOWS CABIN	1900	2/28/14	28	6.9	5.9	3.4
MEADOWS PASS SNOTEL	3230	3/01/14	82	24.5	30.0	21.6
METEOR		2/25/14	16	3.8	4.9	--
M F NOOKSACK SNOTEL	4970	3/01/14	120	49.7	56.4	45.3
MICA CREEK SNOTEL	4510	3/01/14	69	21.5	17.0	19.8
MISSEZULA MTN CAN.	5080	2/28/14	40	9.9	5.6	8.4
MISSION CREEK CAN.	5840	3/01/14	52	18.1	18.1	17.1
MONASHEE PASS CAN.	4500	2/25/14	44	13.1	11.3	11.8
MORSE LAKE SNOTEL	5410	3/01/14	104	32.3	--	43.4
MOSES MOUNTAIN (2)	4800	2/27/14	26	5.4	18.3	11.6
MOSES MTN SNOTEL	5010	3/01/14	27	6.9	18.2	13.0
MOSES PEAK	6650	2/27/14	28	6.9	27.3	17.6
MOSQUITO RDG SNOTEL	5200	3/01/14	84	27.1	26.3	29.8
MOUNT CRAG SNOTEL	3960	3/01/14	53	15.3	33.5	26.1
MT. KOBAU CAN.	5500	2/28/14	31	6.7	17.7	10.2
MOUNT TOLMAN	2000	2/24/14	5	1.0	2.0	2.4
MOWICH SNOTEL	3160	3/01/14	4	1.4	7.4	.7
MOUNT GARDNER	3300	2/28/14	33	9.3	16.8	12.9
MOUNT GARDNER SNOTEL	2920	3/01/14	33	9.6	18.2	14.5
MUTTON CREEK #1	5700	2/24/14	35	6.6	16.3	12.0
N.F. ELK CR SNOTEL	6250	3/01/14	58	13.3	7.0	8.9
NEVADA RIDGE SNOTEL	7020	3/01/14	67	15.6	9.7	10.9
NEW HOZOMEEN LAKE	2800	3/01/14	40	9.0	4.5	8.0
NEZ PERCE CMP SNOTEL	5650	3/01/14	68	17.7	10.0	10.8
NOISY BASIN SNOTEL	6040	3/01/14	105	34.2	34.0	31.5
OLALLIE MDWS SNOTEL	4030	3/01/14	125	45.0	51.1	42.4
OPHIR PARK	7150	3/02/14	59	15.0	8.4	11.2
OYAMA LAKE CAN.	4100	2/28/14	27	4.9	4.4	6.2
PARADISE SNOTEL	5130	3/01/14	137	57.0	70.6	55.5
PARK CK RIDGE SNOTEL	4600	3/01/14	110	34.1	41.1	38.7
PEPPER CREEK SNOTEL	2140	3/01/14	10	4.3	11.4	--
PETERSON MDW SNOTEL	7200	3/01/14	50	11.3	7.1	7.1
PETTIJOHN CREEK	4300	2/28/14	18	3.2	6.0	--
PIGTAIL PEAK SNOTEL	5800	3/01/14	136	50.0	40.9	41.9
PIKE CREEK SNOTEL	5930	3/01/14	36	7.5	7.5	19.6
PIPESTONE PASS	7200	2/24/14	29	5.6	3.6	3.2
POPE RIDGE SNOTEL	3590	3/01/14	59	15.2	14.3	16.2
POSTILL LAKE CAN.	4200	2/27/14	27	6.8	6.7	7.3
POTATO HILL SNOTEL	4510	3/01/14	80	24.9	27.3	20.8
QUARTZ PEAK SNOTEL	4700	3/01/14	51	15.4	17.6	19.5
RAGGED MTN SNOTEL	4210	3/01/14	55	16.2	19.0	21.4
RAGGED RIDGE	3330	2/28/14	21	5.9	7.8	7.9
RAINY PASS SNOTEL	4890	3/01/14	93	27.9	30.1	31.7
RAINY PASS	4780	3/03/14	112	29.9	28.5	--
REX RIVER SNOTEL	3810	3/01/14	92	27.6	38.6	28.3
ROCKER PEAK SNOTEL	8000	3/01/14	72	16.4	8.8	10.1
ROLAND SUMMIT	5120	2/28/14	107	34.1	26.7	27.0
ROUND TOP MTN	4020	3/02/14	44	11.3	12.3	--
RUSTY CREEK	4000	2/24/14	16	2.2	6.3	6.0
SADDLE MTN SNOTEL	7900	3/01/14	101	29.3	16.7	19.0
SALMON MDWS SNOTEL	4460	3/01/14	24	5.5	10.2	8.7
SASSE RIDGE SNOTEL	4340	3/01/14	95	26.7	26.1	27.3
SATUS PASS	4030	2/27/14	26	7.2	8.6	8.9
SATUS PASS	3960	3/01/14	28	9.0	8.4	--
SAVAGE PASS SNOTEL	6170	3/01/14	98	26.6	18.6	20.5
SAWMILL RIDGE SNOTEL	4640	3/01/14	89	26.5	33.0	--
SENTINEL BT SNOTEL	4680	3/01/14	29	6.6	8.7	8.1

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1971-00
SHEEP CANYON SNOTEL	3990	3/01/14	60	22.3	45.1	29.4
SHERWIN SNOTEL	3200	3/01/14	---	9.4	7.9	9.1
SILVER STAR MTN CAN.	5600	3/01/14	64	22.9	29.7	25.0
SKALKAHO SNOTEL	7260	3/01/14	89	23.3	15.1	17.5
SKITWISH RIDGE	5110	2/26/14	79	25.4	25.8	25.0
SKOOKUM CREEK SNOTEL	3310	3/01/14	62	32.4	49.7	29.4
SKOOKUM LAKES	4230	2/27/14	40	9.6	11.5	--
SLIDE ROCK MOUNTAIN	7100	2/23/14	58	14.5	11.2	10.1
SOURDOUGH GUL SNOTEL	4000	3/01/14	3	1.5	2.5	.2
SOUTH BALDY	4920	2/27/14	59	16.4	17.3	--
SPENCER MDW SNOTEL	3400	3/01/14	46	15.9	30.7	28.4
SPIRIT LAKE SNOTEL	3520	3/01/14	10	3.7	19.3	5.2
SPOTTED BEAR MTN.	7000	2/26/14	50	13.5	7.8	10.7
SPRUCE SPGS SNOTEL	5700	3/01/14	41	13.1	8.4	14.7
STARVATION MOUNTAIN	6750	2/28/14	47	11.4	18.0	14.3
STAHL PEAK SNOTEL	6030	3/01/14	85	26.2	25.2	27.5
STAMPEDE PASS SNOTEL	3850	3/01/14	94	27.7	28.5	35.4
STEMPLE PASS	6600	2/24/14	44	9.2	6.4	7.0
STEVENS PASS SNOTEL	3950	3/01/14	121	31.7	32.5	34.1
STORM LAKE	7780	2/28/14	54	11.7	9.4	9.5
STRYKER BASIN	6180	2/26/14	83	29.0	24.6	25.0
SUMMERLAND RES CAN.	4200	2/26/14	38	9.1	7.2	8.4
SUNSET SNOTEL	5540	3/01/14	64	18.4	15.0	19.1
SURPRISE LKS SNOTEL	4290	3/01/14	96	33.6	44.4	39.7
SWAMP CREEK SNOTEL	3930	3/01/14	73	21.5	16.0	15.6
SWIFT CREEK SNOTEL	4440	3/01/14	82	31.7	66.2	48.0
TEN MILE LOWER	6600	2/27/14	46	11.5	6.8	5.4
TEN MILE MIDDLE	6800	2/27/14	56	13.6	7.2	7.5
THUNDER BASIN SNOTEL	4320	3/01/14	82	22.6	27.1	26.7
THOMPSON CREEK	2500	2/28/14	12	3.3	5.3	4.2
THOMPSON RIDGE	4650	2/28/14	43	10.1	10.9	--
TINKHAM CREEK SNOTEL	2990	3/01/14	67	18.5	25.9	23.8
TOATS COULEE	2850	2/26/14	14	2.0	4.0	3.1
TOUCHET SNOTEL	5530	3/01/14	63	22.7	22.8	26.5
TROUGH #2 SNOTEL	5480	3/01/14	26	8.4	7.9	8.6
TROUT CREEK CAN.	5650	2/27/14	35	8.3	7.8	6.7
TUNNEL AVENUE	2450	2/28/14	49	14.1	12.5	15.8
TWELVEMILE SNOTEL	5600	3/01/14	79	22.2	8.7	13.8
TWIN LAKES SNOTEL	6400	3/01/14	126	43.5	25.7	30.2
UPPER HOLLAND LAKE	6200	3/01/14	---	29.7E	24.1	26.0
UPPER WHEELER SNOTEL	4330	3/01/14	33	9.3	7.3	11.1
VASEUX CREEK CAN.	4250	2/23/14	29	5.7	4.5	5.5
WARM SPRINGS SNOTEL	7800	3/01/14	96	22.2	13.0	14.8
WATERHOLE SNOTEL	5010	3/01/14	78	25.8	43.2	30.8
WEASEL DIVIDE	5450	2/26/14	83	24.6	21.7	26.2
WHITE PASS ES SNOTEL	4440	3/01/14	63	19.6	19.3	19.5
WHITE ROCKS MTN CAN.	7200	2/25/14	48	13.5	19.3	19.6

COLUMBIA ABOVE METHOW Time Series Snowpack Summary
Based on Provisional SNOTEL data as of Mar 05, 2014



CHELAN, ENTIAT, WENATCHEE Time Series Snowpack Summary
Based on Provisional SNOTEL data as of Mar 05, 2014



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Snow, Water and Climate Services

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Helpful Internet Addresses

NRCS Snow Survey and Climate Services Homepages

Washington:
http://www.wa.nrcs.usda.gov/snow

Oregon:
http://www.or.nrcs.usda.gov/snow

Idaho:
http://www.id.nrcs.usda.gov/snow

National Water and Climate Center (NWCC):
http://www.wcc.nrcs.usda.gov

USDA-NRCS Agency Homepages

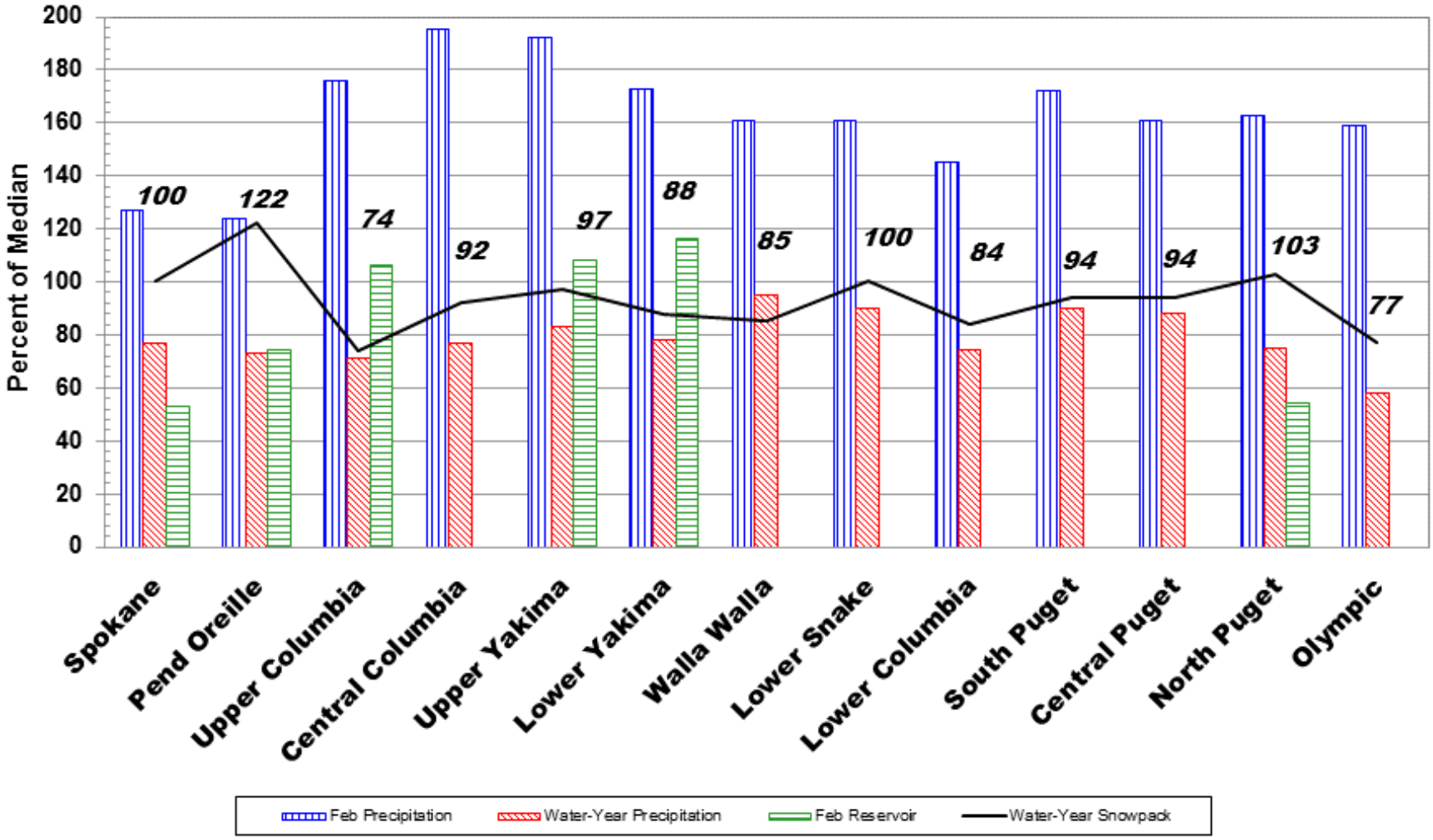
Washington:
http://www.wa.nrcs.usda.gov

NRCS National:
http://www.nrcs.usda.gov

NRCS Natural Resources Conservation Service

March 1, 2014 - Snowpack, Precipitation and Reservoir Conditions at a Glance

(Water Year = October 1, 2013 - Current Date)



Western Snow Conference

The Western Snow Conference is an annual tradition which started in 1932 as an international forum for individuals and organizations to share scientific, management and socio-political information on snow and runoff. The principal aim of the Western Snow Conference is to advance snow and hydrological sciences. The South Continental Area Committee is making plans for the 82nd Annual Western Snow Conference in 2014.

Mark your calendar and start thinking about submitting a paper to attend the 2014 Western Snow Conference:

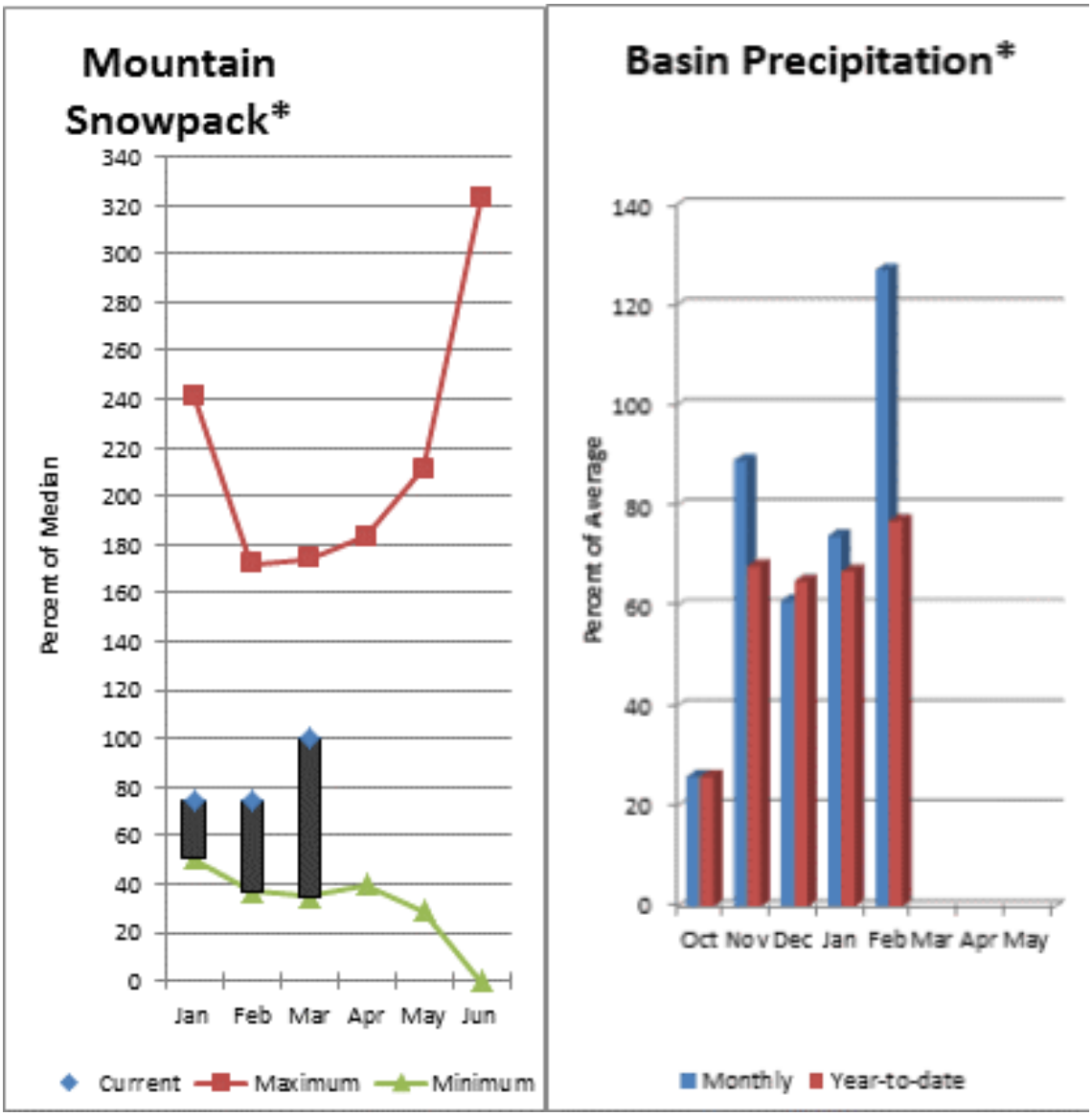
Dates: April 14-17, 2014
Location: Durango, Colorado

The Technical Tour is scheduled for Thursday, April 17th, to explore current research activities in the Durango/Silverton area led by personnel of the Center for Snow and Avalanche Studies in Silverton. One of their projects is the issue of dust on snow, changes in albedo, accelerated melt, and the subsequent impact on stream flow.

Additional information about the conference and the Call for Papers will be posted on the WSC web page at http://www.westernsnowconference.org/

Also find Western Snow Conference on Facebook and Twitter.

Spokane River Basin



*Based on selected stations

The March 1 forecasts for summer runoff within the Spokane River Basin are 88% of average near Post Falls and 101% at Long Lake. The Chamokane River near Long Lake forecasted to have 72% of average flows for the May-August period. The forecast is based on a basin snowpack that is 100% of normal and precipitation that is 77% of average for the water year. Precipitation for February was above normal at 127% of average. Streamflow on the Spokane River at Spokane was 53% of average for February. March 1 storage in Coeur d'Alene Lake was 70,000 acre feet, 53% of average and 29% of capacity. Snowpack at Quartz Peak SNOTEL site was 79% of average with 15.4 inches of water content. Average temperatures in the Spokane basin were 6-8 degrees below normal for February and 1-3 degrees below for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2014

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Spokane R nr Post Falls (2)	APR-JUL	1660	2080	2360	99	2640	3060	2390
	APR-SEP	1740	2160	2450	99	2740	3160	2480
Spokane R at Long Lake (2)	APR-JUL	1890	2340	2650	101	2960	3410	2620
	APR-SEP	2090	2560	2870	101	3180	3650	2850
Chamokane Ck nr Long Lake	MAY-AUG	1.53	4.6	6.7	72	8.8	11.9	9.3

SPOKANE RIVER BASIN
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
Coeur D'alene	238.5	70.2	67.2	132.8

SPOKANE RIVER BASIN
Watershed Snowpack Analysis - March 1, 2014

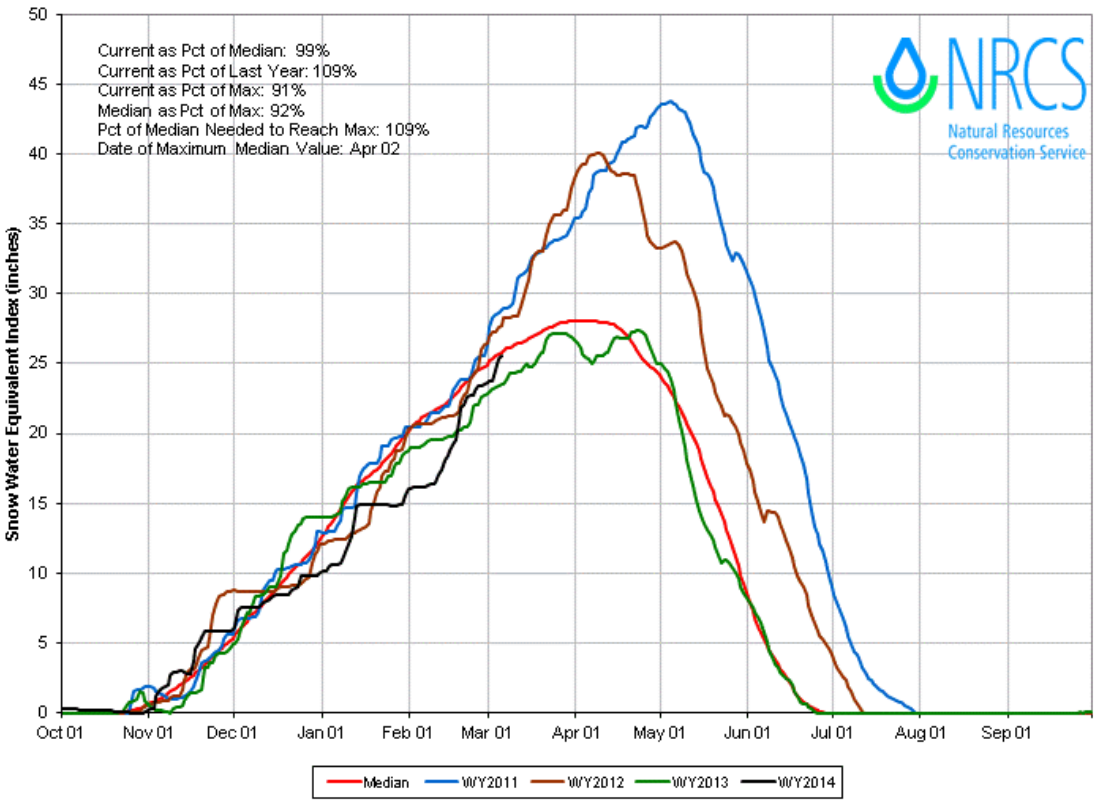
Watershed	Number of Data Sites	This Year as % of Last Yr	Median
SPOKANE RIVER	14	113	100
NEWMAN LAKE	3	80	78

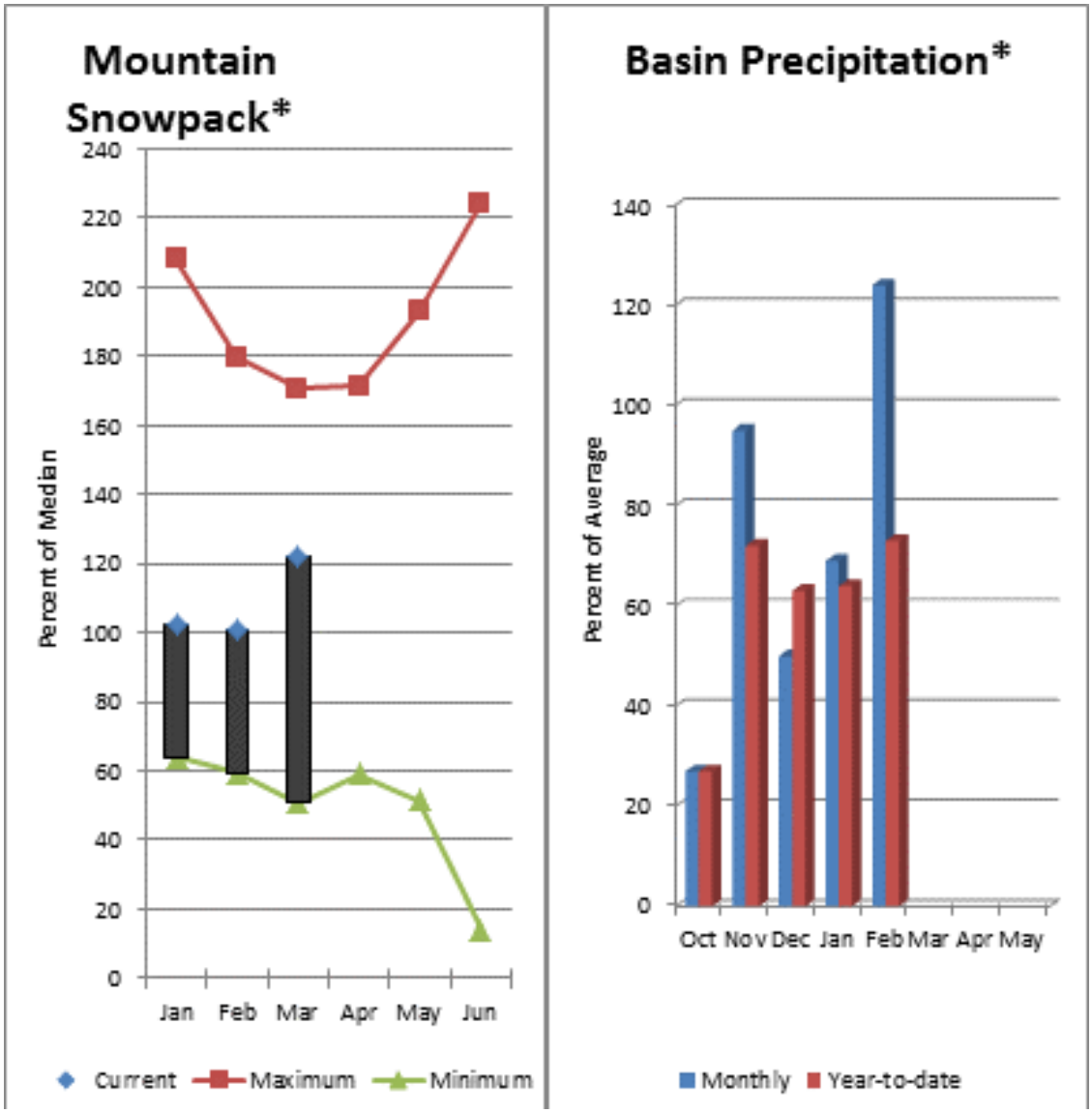
* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

PREIST, COEUR D'ALENE, ST. JOE, SPOKANE, PALOUSE Time Series Snowpack Summary
Based on Provisional SNOTEL data as of Mar 05, 2014





*Based on selected stations

The April – September average forecast for the Priest River near the town of Priest River is 73% and the Pend Orielle below Box Canyon is 117%. February streamflow was 64% of average on the Pend Oreille River and 70% on the Columbia Birchbank. March 1 snow cover was 122% of normal in the Pend Oreille River Basin. Bunchgrass Meadows SNOTEL site had 18.6 inches of snow water on the snow pillow. Normally Bunchgrass would have 22.5 inches on March 1. Precipitation during February was 124% of average, keeping the year-to-date precipitation at 73% of average. Reservoir storage in the basin, including Lake Pend Oreille and Priest Lake was 74% of normal. Average temperatures were 6-8 degrees below normal for February and 13 degrees below normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2014

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Pend Oreille Lake Inflow (2)	APR-JUL	11600	12900	13700	116	14500	15800	11800
	APR-SEP	12800	14100	15000	117	15900	17200	12800
Priest R nr Priest River (1,2)	APR-JUL	380	505	565	72	625	750	780
	APR-SEP	405	540	605	73	670	805	830
Pend Oreille R bl Box Canyon (2)	APR-JUL	11800	13100	13900	117	14700	16000	11900
	APR-SEP	12900	14300	15200	117	16100	17500	13000

PEND OREILLE RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
Pend Oreille	1561.	571.0	930.0	792.6
Priest Lake Nr Coolin	119.3	60.3	50.2	57.1

PEND OREILLE RIVER BASINS
Watershed Snowpack Analysis - March 1, 2014

Watershed	Number of Data Sites	This Year as % of Last Yr	This Year as % of Median
COLVILLE RIVER	2	76	68
PEND OREILLE RIVER	68	139	125
KETTLE RIVER	2	72	73

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

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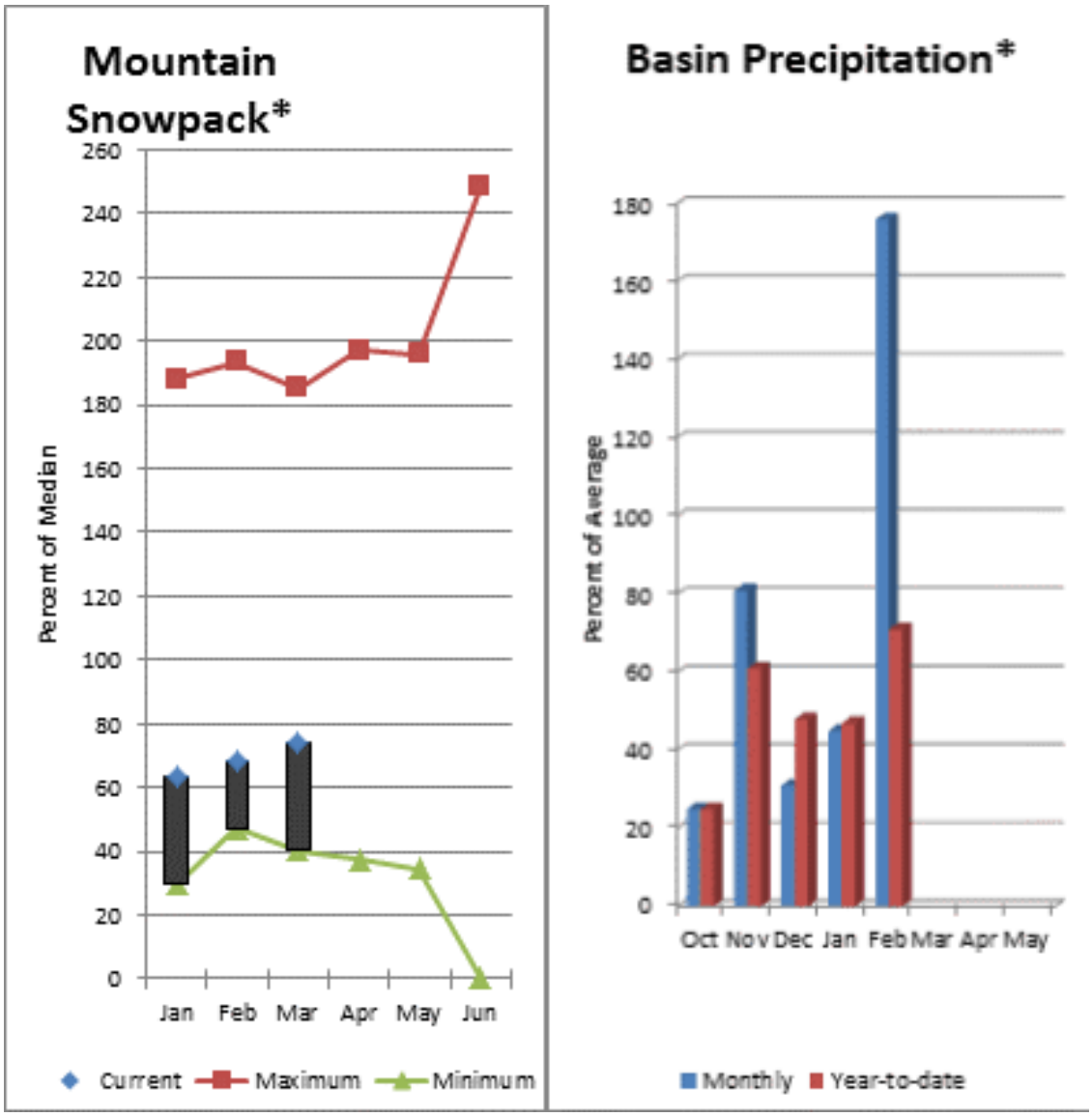
(2) - The value is natural volume - actual volume may be affected by upstream water management.



*Based on selected stations

Summer runoff average forecast for the Okanogan River is 124%, Similkameen River is 103%, Kettle River 91% and Methow River is 69%. March 1 snow cover on the Okanogan was 89% of normal, Omak Creek was 45% and the Methow was 90%. February precipitation in the Upper Columbia was 176% of average, with precipitation for the water year at 71% of average. February streamflow for the Methow River was 88% of average, 101% for the Okanogan River and 97% for the Similkameen. Snow-water content at Salmon Meadows SNOTEL was 5.5 inches. Average for this site is 8.7 inches on March 1. Combined storage in the Conconully Reservoirs was 106% of normal and 89% of capacity. Temperatures were 6-8 degrees below normal for February and 1-3 below for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2014

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Colville R at Kettle Falls	APR-JUL	13.7	51	76	64	101	138	119
	APR-SEP	16.6	57	85	65	113	153	131
Kettle R nr Laurier	APR-JUL	1240	1450	1600	89	1750	1960	1800
	APR-SEP	1280	1520	1680	89	1840	2080	1880
Columbia R at Birchbank (1,2)	APR-JUL	25600	29100	30700	91	32200	35700	33840
	APR-SEP	32400	36800	38700	93	40700	45000	41750
Columbia R at Grand Coulee (2)	APR-JUL	45200	48000	49300	97	50600	53300	51015
	APR-SEP	54200	57700	59300	99	60900	64400	60110
Similkameen R nr Nighthawk (1)	APR-JUL	885	1120	1230	103	1340	1570	1200
	APR-SEP	970	1210	1320	103	1430	1670	1280
Okanogan R nr Tonasket (1)	APR-JUL	1270	1600	1750	118	1900	2230	1480
	APR-SEP	1420	1790	1950	118	2110	2480	1650
Okanogan R at Malott (1)	APR-JUL	1320	1660	1810	125	1960	2300	1450
	APR-SEP	1460	1840	2010	124	2180	2560	1620
Methow R nr Pateros	APR-JUL	415	510	575	69	630	725	835
	APR-SEP	455	550	615	69	680	775	895

UPPER COLUMBIA RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
Conconully Lake (salmon Lake Dam)	0.0	9.3	8.7	7.3
Conconully Reservoir	13.0	11.7	10.4	7.4

UPPER COLUMBIA RIVER BASINS
Watershed Snowpack Analysis - March 1, 2014

Watershed	Number of Data Sites	This Year as % of Last Yr	Median
OKANOGAN RIVER	5	73	83
OMAK CREEK	3	30	45
SANPOIL RIVER	1	50	42
SIMILKAMEEN RIVER	0		
TOATS COULEE CREEK	4	63	79
CONCONULLY LAKE	3	44	54
METHOW RIVER	7	78	87

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

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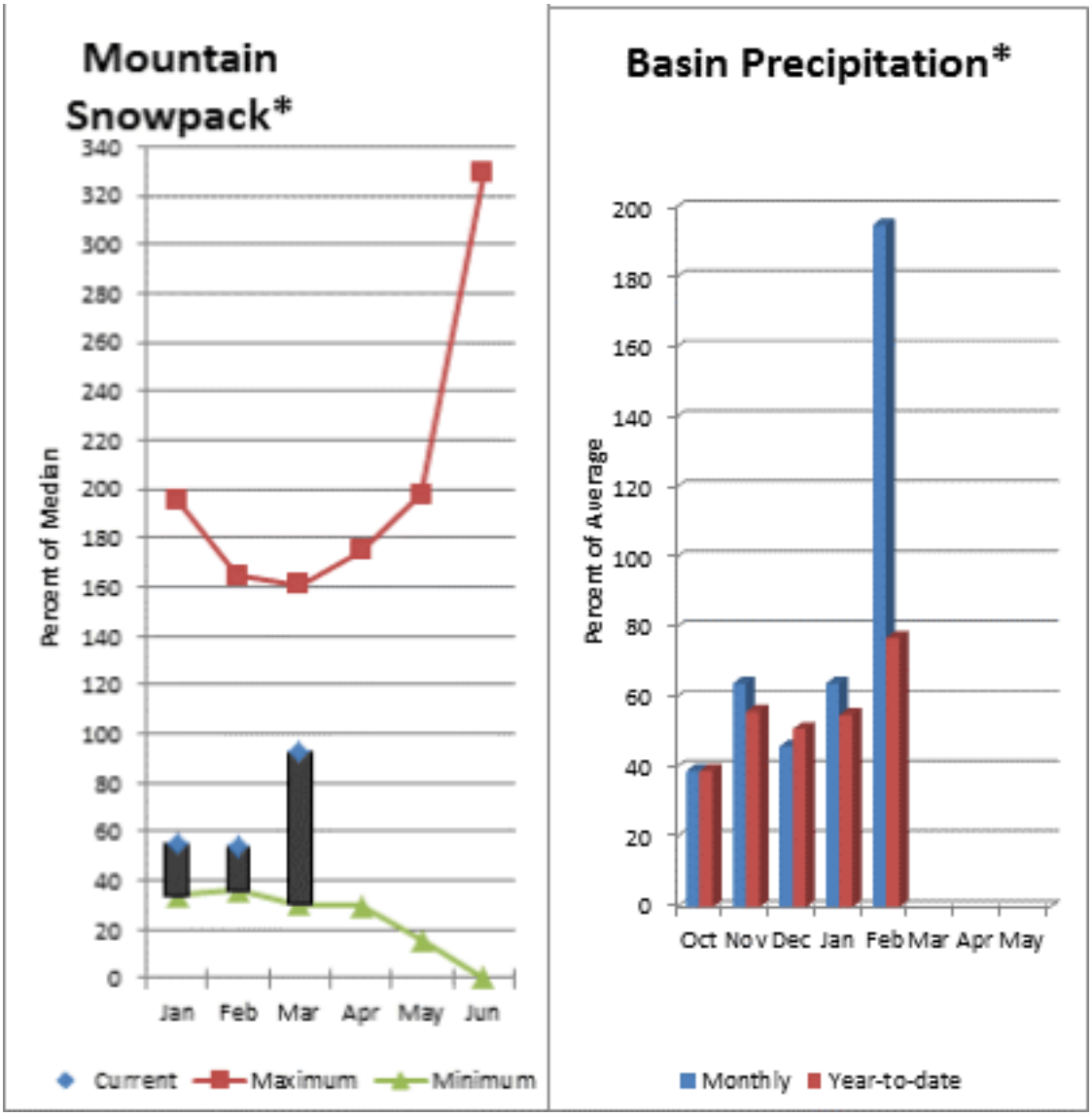
(2) - The value is natural volume - actual volume may be affected by upstream water management.



*Based on selected stations

Precipitation during February was 195% of average in the basin and 75% for the water-year-to-date. Runoff for Entiat River is forecast to be 80% of average for the summer. The April-September average forecast for Chelan River is 84%, Wenatchee River at Plain is 94%, Stehekin River is 90% and Icicle Creek is 93%. February average streamflows on the Chelan River were 74% and on the Wenatchee River 62%. March 1 snowpack in the Wenatchee River Basin was 92% of normal; the Chelan, 86%; the Entiat, 94%; Stemilt Creek, 90% and Colockum Creek, 98%. Reservoir storage in Lake Chelan was not available. Lyman Lake SNOTEL had the most snow water with 40.3 inches of water. This site would normally have 48.6 inches on March 1. Temperatures were 4-6 degrees below normal for February and 1-2 degrees below normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2014

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Stehekin R at Stehekin	APR-JUL	495	565	615	90	665	735	680
	APR-SEP	585	660	710	90	760	835	790
Chelan R at Chelan (2)	APR-JUL	715	800	855	86	910	995	1000
	APR-SEP	790	880	945	84	1010	1100	1120
Entiat R nr Ardenvoir	APR-JUL	131	151	164	82	177	197	200
	APR-SEP	144	163	177	80	191	210	220
Wenatchee R at Plain	APR-JUL	785	880	940	95	1000	1090	990
	APR-SEP	860	955	1020	94	1090	1180	1080
Icicle Ck nr Leavenworth	APR-JUL	220	245	260	95	275	300	275
	APR-SEP	235	260	280	93	300	325	300
Wenatchee R at Peshastin	APR-JUL	1050	1180	1260	92	1340	1470	1370
	APR-SEP	1150	1280	1370	92	1460	1590	1490
Columbia R bl Rock Island Dam (2)	APR-JUL	46500	51200	54300	97	57400	62100	55770
	APR-SEP	55900	61300	65000	100	68700	74100	65200

CENTRAL COLUMBIA RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
Lake Chelan	676.1	225.6	279.8	

CENTRAL COLUMBIA RIVER BASINS
Watershed Snowpack Analysis - March 1, 2014

Watershed	Number of Data Sites	This Year as % of Last Yr	Median
CHELAN LAKE BASIN	3	86	86
ENTIAT RIVER	1	106	94
WENATCHEE RIVER	7	101	92
STEMILT CREEK	1	127	84
COLOCKUM CREEK	1	106	98

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

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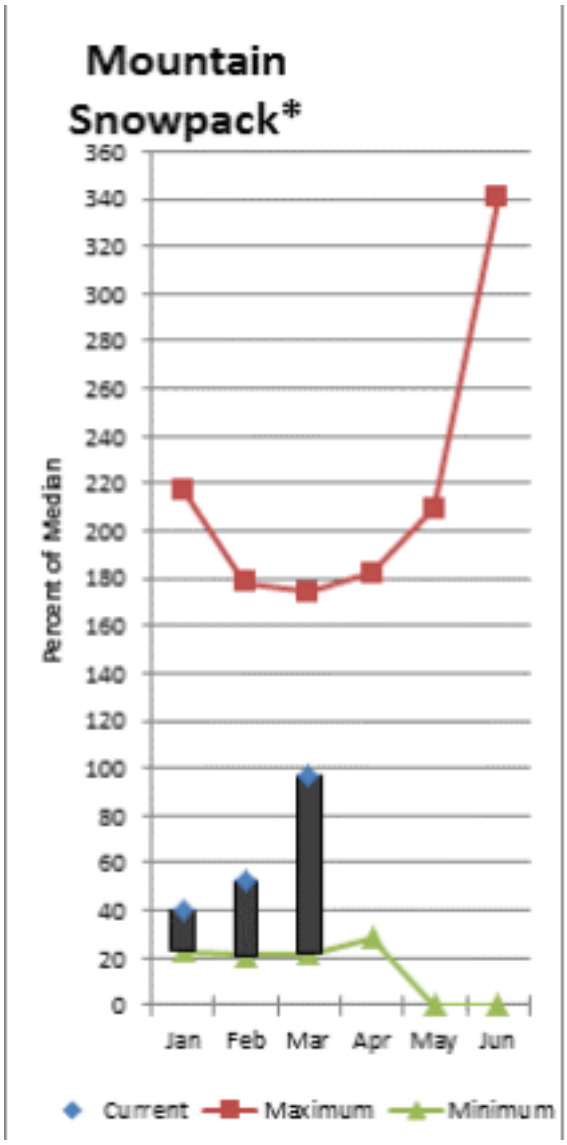
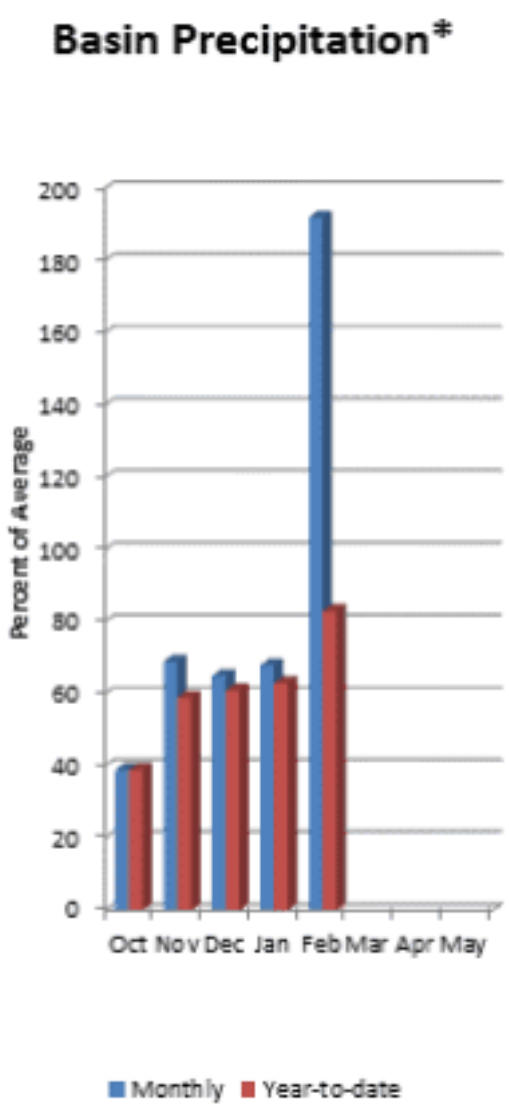
(2) - The value is natural volume - actual volume may be affected by upstream water management.





*Based on selected stations

March 1 reservoir storage for the Upper Yakima reservoirs was 487,000-acre feet, 108% of average. Forecasts for the Yakima River at Cle Elum are 92% of average and the Teanaway River near Cle Elum is at 98%. Lake inflows are all forecasted to be near average this summer as well. February streamflows within the basin were Cle Elum River near Roslyn at 59%. March 1 snowpack was 97% based upon 9 snow course and SNOTEL readings within the Upper Yakima Basin. Precipitation was 192% of average for February and 83% year-to-date for water. Volume forecasts for the Yakima Basin are for natural flow. As such, they may differ from the U.S. Bureau of Reclamation's forecast for the total water supply available, which includes irrigation return flow.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2014

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Keechelus Reservoir Inflow (2)	APR-JUL	80	97	109	94	121	138	116
	APR-SEP	89	107	119	94	131	149	126
Kachess Reservoir Inflow (2)	APR-JUL	74	88	98	94	108	122	104
	APR-SEP	81	95	105	93	115	129	113
Cle Elum Lake Inflow (2)	APR-JUL	305	340	365	95	390	425	385
	APR-SEP	325	365	390	94	415	455	415
Yakima R at Cle Elum (2)	APR-JUL	515	625	700	93	775	885	755
	APR-SEP	560	680	765	92	850	970	830
Teanaway R bl Forks nr Cle Elum	APR-JUL	97	115	128	98	141	159	130
	APR-SEP	99	117	130	98	143	161	133

UPPER YAKIMA RIVER BASIN
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
Keechelus	157.8	106.2	101.6	92.3
Kachess	239.0	187.0	182.6	143.6
Cle Elum	436.9	193.9	279.8	214.4

UPPER YAKIMA RIVER BASIN
Watershed Snowpack Analysis - March 1, 2014

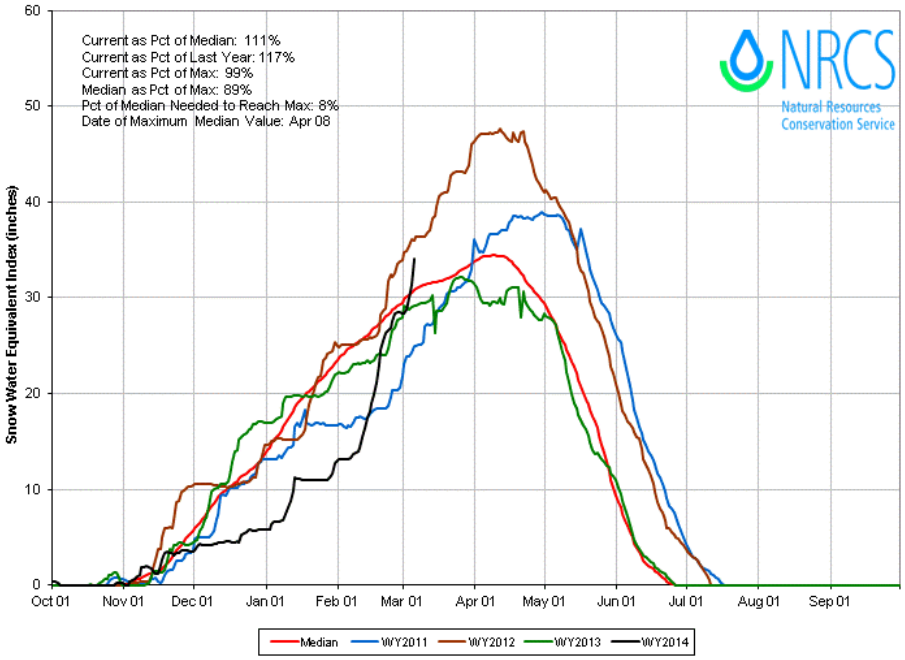
Watershed	Number of Data Sites	This Year as % of Last Yr	This Year as % of Median
UPPER YAKIMA RIVER	8	105	97

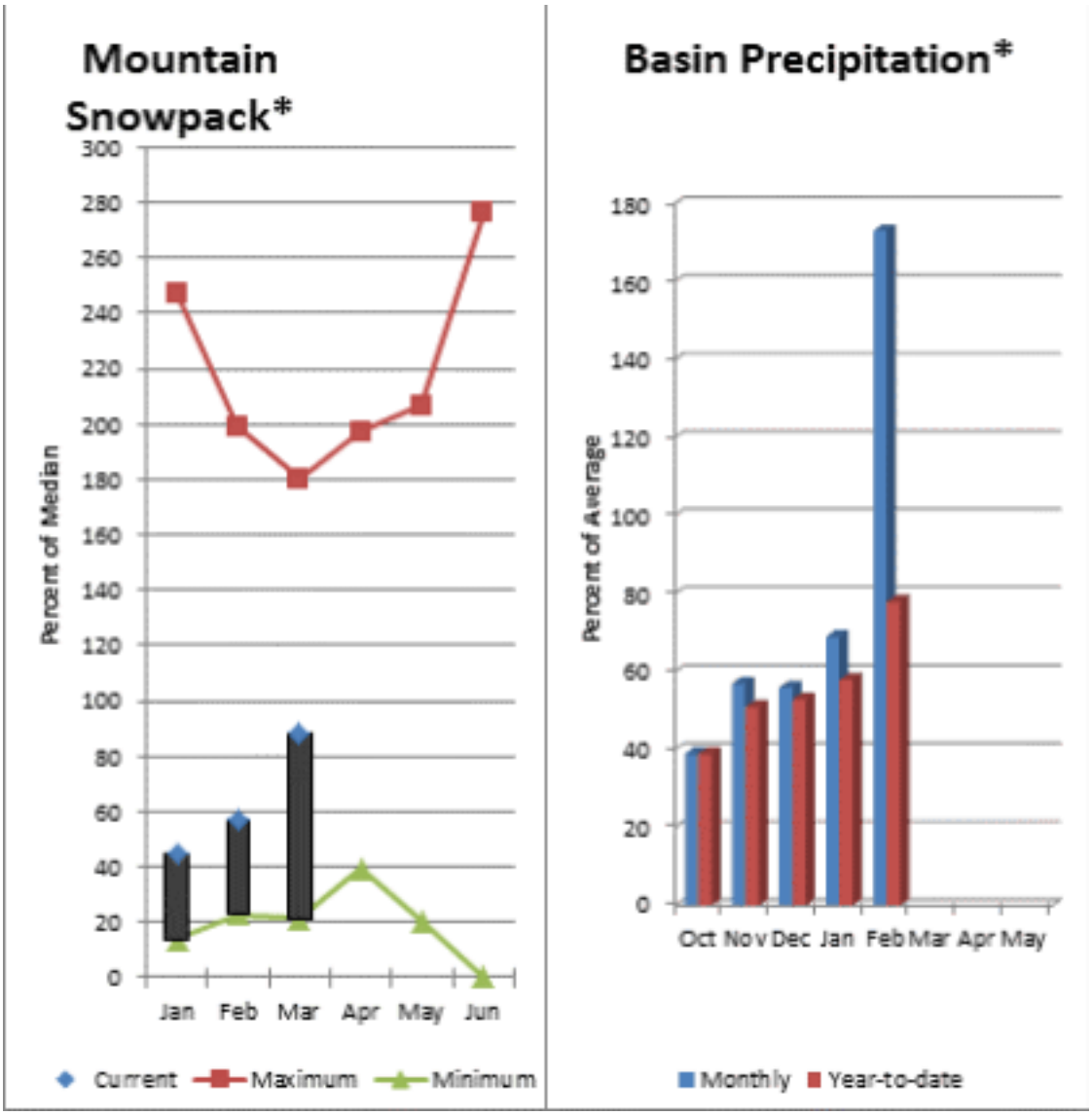
* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

UPPER YAKIMA Time Series Snowpack Summary
Based on Provisional SNOTEL data as of Mar 05, 2014





*Based on selected stations

February average streamflows within the basin were: Yakima River near Parker, 52%; Naches River near Naches, 49%; and Yakima River at Kiona, 61%. March 1 reservoir storage for Bumping and Rimrock reservoirs was 159,000-acre feet, 116% of average. Forecast averages for Yakima River near Parker are 94%; American River near Nile, 80%; Ahtanum Creek, 97%; and Klickitat River near Glenwood, 92%. March 1 snowpack was 88% based upon 7 snow course and SNOTEL readings within the Lower Yakima Basin and Ahtanum Creek reported in at 86% of normal. Precipitation was 173% of average for February and 78% year-to-date for water. Temperatures were 4-6 degrees below normal for February and for 1-2 degrees below normal for the water year. Volume forecasts for Yakima Basin are for natural flow. As such, they may differ from the U.S. Bureau of Reclamation's forecast for the total water supply available, which includes irrigation return flow.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2014

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Bumping Lake Inflow (2)	APR-JUL	90	104	113	99	122	136	114
	APR-SEP	98	112	122	99	132	146	123
American R nr Nile	APR-JUL	62	74	82	80	90	102	102
	APR-SEP	67	79	88	80	97	109	110
Rimrock Lake Inflow (2)	APR-JUL	157	174	185	99	196	215	187
	APR-SEP	188	205	220	100	235	250	220
Naches R nr Naches (2)	APR-JUL	495	575	630	90	685	765	700
	APR-SEP	530	615	675	89	735	820	760
Ahtanum Ck at Union Gap	APR-JUL	16.4	22	26	96	30	36	27
	APR-SEP	18.3	24	28	97	32	38	29
Yakima R nr Parker (2)	APR-JUL	1220	1430	1570	95	1710	1920	1660
	APR-SEP	1350	1560	1710	94	1860	2070	1820
Klickitat R nr Glenwood	APR-JUL	92	106	116	92	126	140	126
	APR-SEP	102	117	128	92	139	154	139
Klickitat R nr Pitt	APR-JUL	345	390	425	98	460	505	435
	APR-SEP	420	475	515	99	555	610	520

LOWER YAKIMA RIVER BASIN
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
Bumping Lake	33.7	16.7	10.2	13.3
Rimrock	198.0	142.1	140.3	123.3

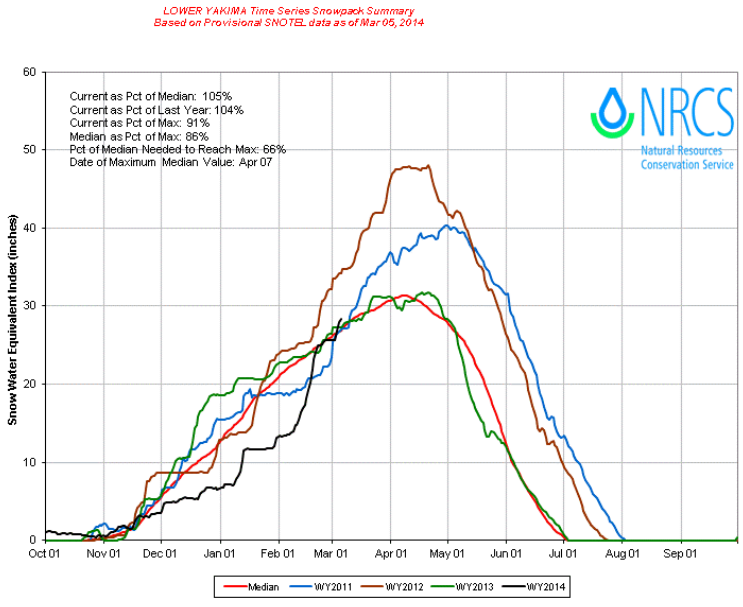
LOWER YAKIMA RIVER BASIN
Watershed Snowpack Analysis - March 1, 2014

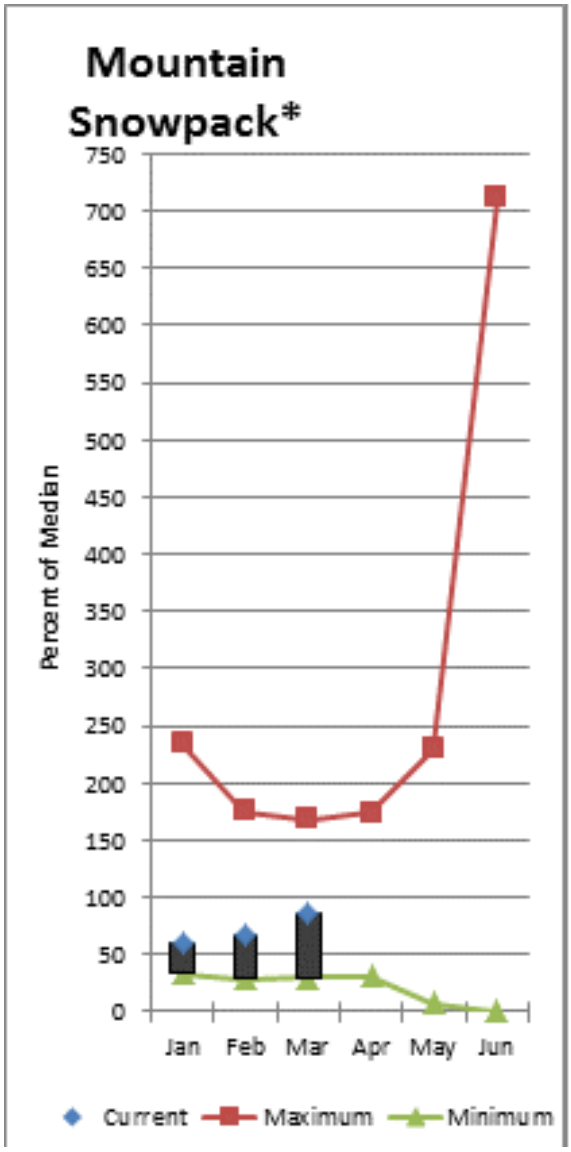
Watershed	Number of Data Sites	This Year as % of Last Yr	Median
LOWER YAKIMA RIVER	7	88	88
AHTANUM CREEK	2	89	86

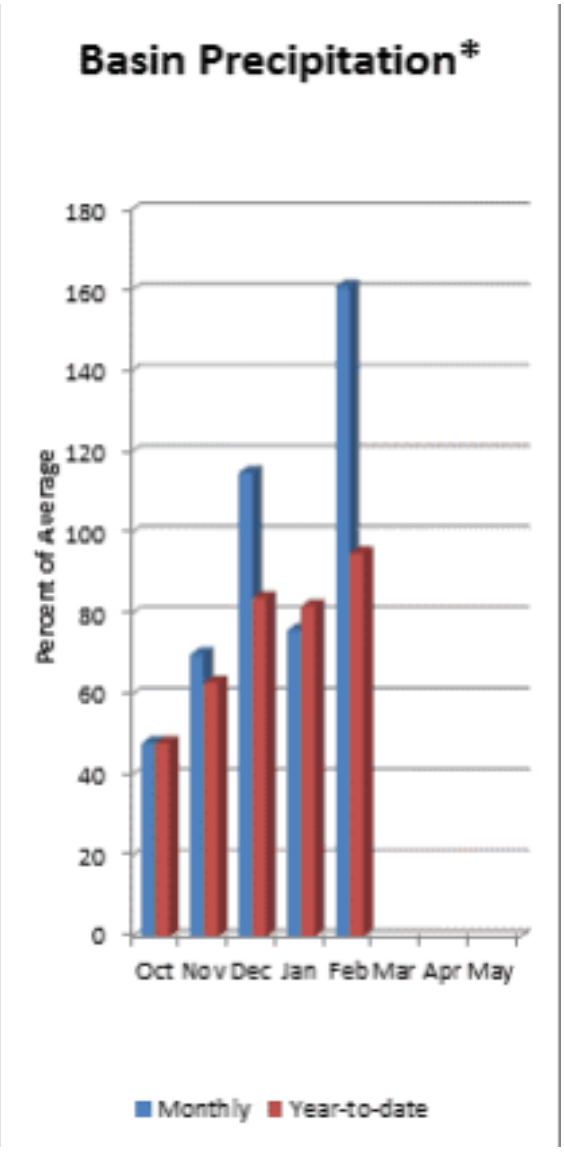
* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.







*Based on selected stations

February precipitation was 161% of average, maintaining the year-to-date precipitation at 95% of average. Snowpack in the basin was 85% of normal. Streamflow forecasts are 93% of average for Mill Creek and 94% for the SF Walla Walla near Milton-Freewater. Average temperatures were 2-6 degrees below normal for February and 1-3 below normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2014

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
SF Walla Walla R nr Milton-Freewater	MAR-SEP	63	71	76	95	81	89	80
	APR-JUL	40	46	50	93	54	60	54
	APR-SEP	51	57	62	94	67	73	66
Mill Ck nr Walla Walla	APR-JUL	14.1	18.2	21	88	24	28	24
	APR-SEP	17.7	22	25	93	28	32	27

WALLA WALLA RIVER BASIN
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

WALLA WALLA RIVER BASIN
Watershed Snowpack Analysis - March 1, 2014

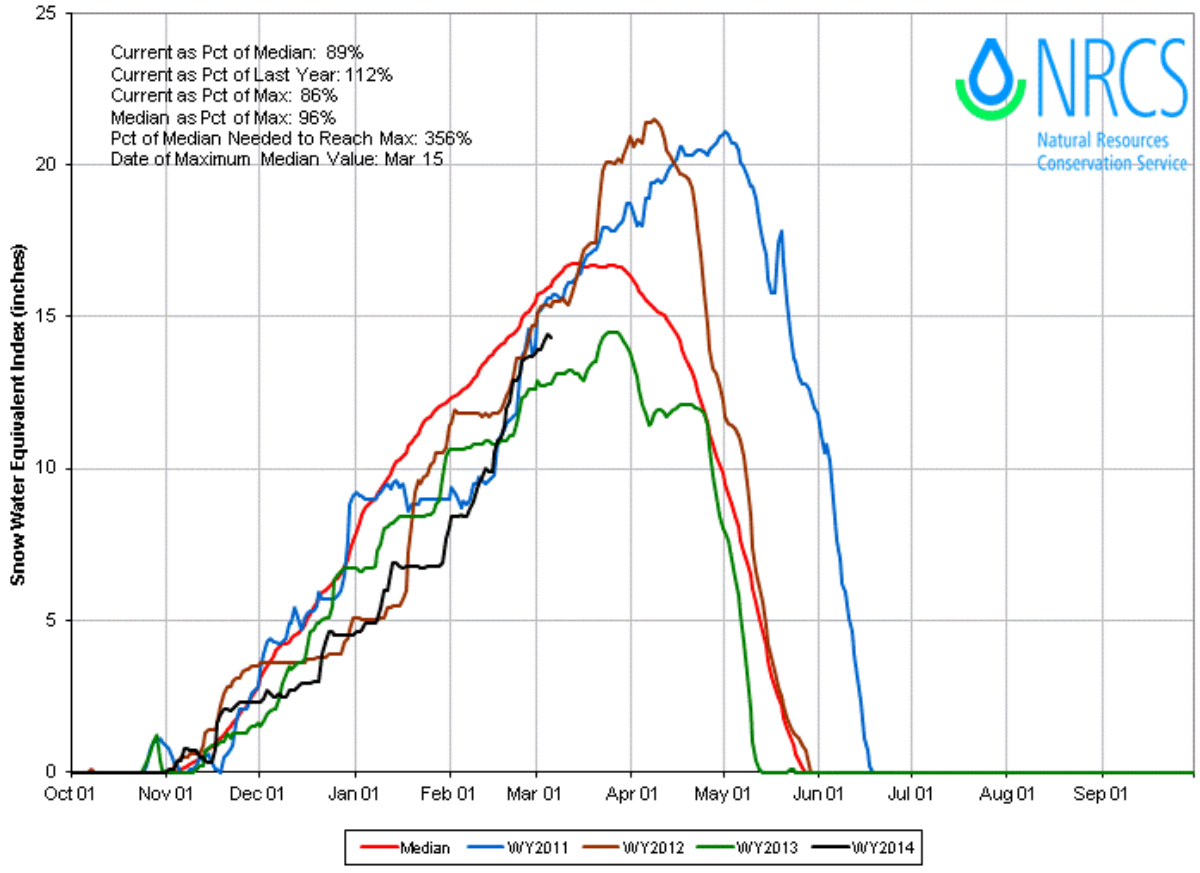
Watershed	Number of Data Sites	This Year as % of Last Yr	Median
WALLA WALLA RIVER	2	100	85

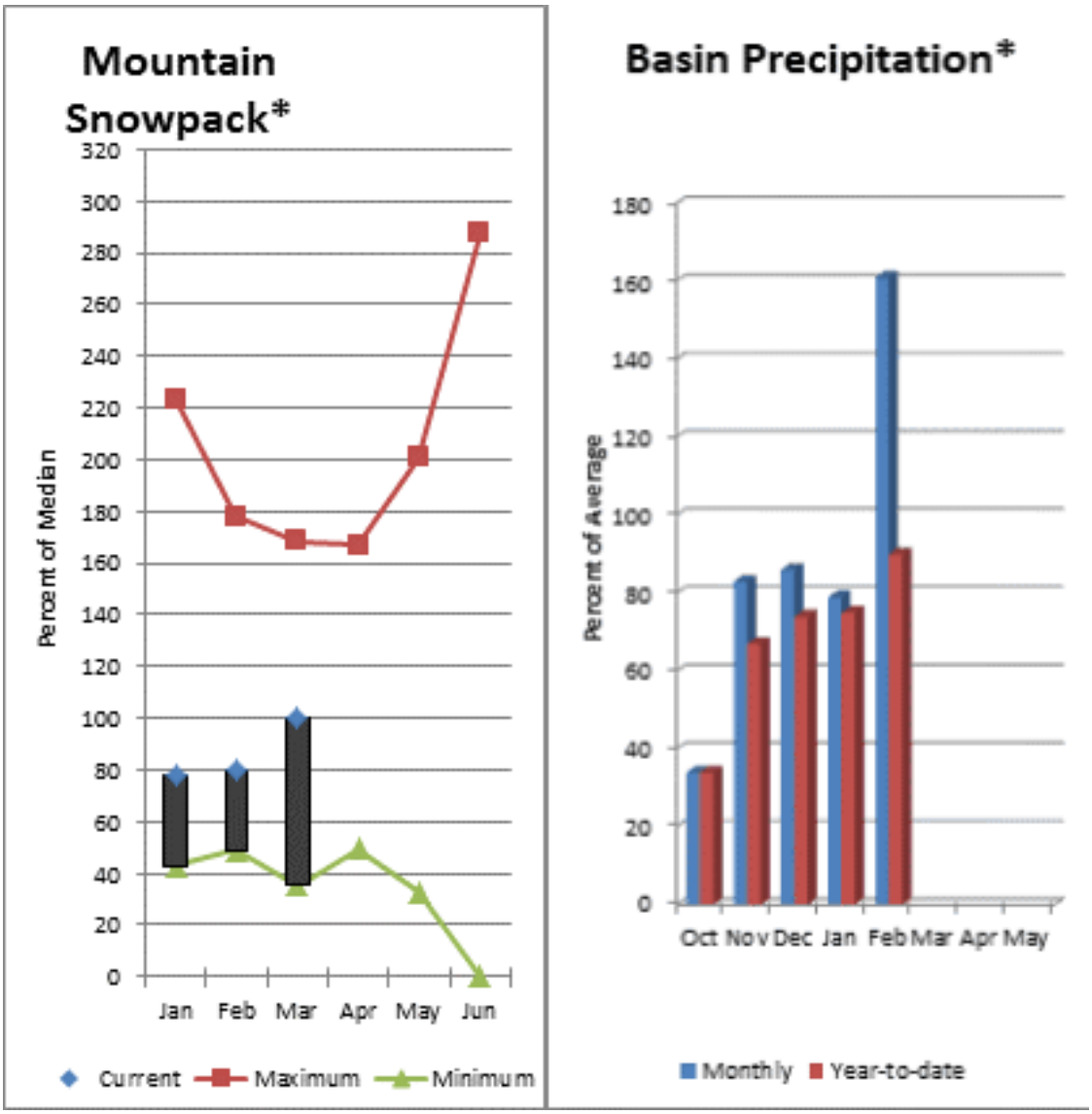
* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

WALLA WALLA, TOUCHET Time Series Snowpack Summary
Based on Provisional SNOTEL data as of Mar 05, 2014





*Based on selected stations

The Grande Ronde River can expect summer flows to be about 84% of normal. The forecast for Asotin Creek at Asotin predicts 100% of average flows for the April – July runoff period. February precipitation was 161% of average, bringing the year-to-date precipitation to 90% of average. March 1 snowpack readings averaged 100% of normal. February streamflow was 72% of average for Snake River below Lower Granite Dam and 118% for Grande Ronde River near Troy. Dworshak Reservoir storage was 100% of average. Average temperatures were 4-6 degrees below normal for February and 2-3 degrees below for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2014

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Grande Ronde R at Troy (1)	MAR-JUL	845	1140	1270	84	1400	1700	1510
	APR-SEP	665	965	1100	84	1240	1530	1310
Asotin Ck at Asotin	APR-JUL	20	29	35	100	41	50	35
Clearwater R at Spalding (1,2)	APR-JUL	6240	7630	8260	120	8890	10300	6890
	APR-SEP	6600	8040	8690	120	9340	10800	7270
Snake R bl Lower Granite Dam (1,2)	APR-JUL	14900	19900	22100	111	24400	29400	19848
	APR-SEP	16600	22200	24800	111	27300	32900	22280

LOWER SNAKE RIVER BASIN
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
Dworshak	3468.	2365.	2581.	2358.

LOWER SNAKE RIVER BASIN
Watershed Snowpack Analysis - March 1, 2014

Watershed	Number of Data Sites	This Year as % of: Last Yr	Median
LOWER SNAKE, GRANDE RON	12	127	106

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

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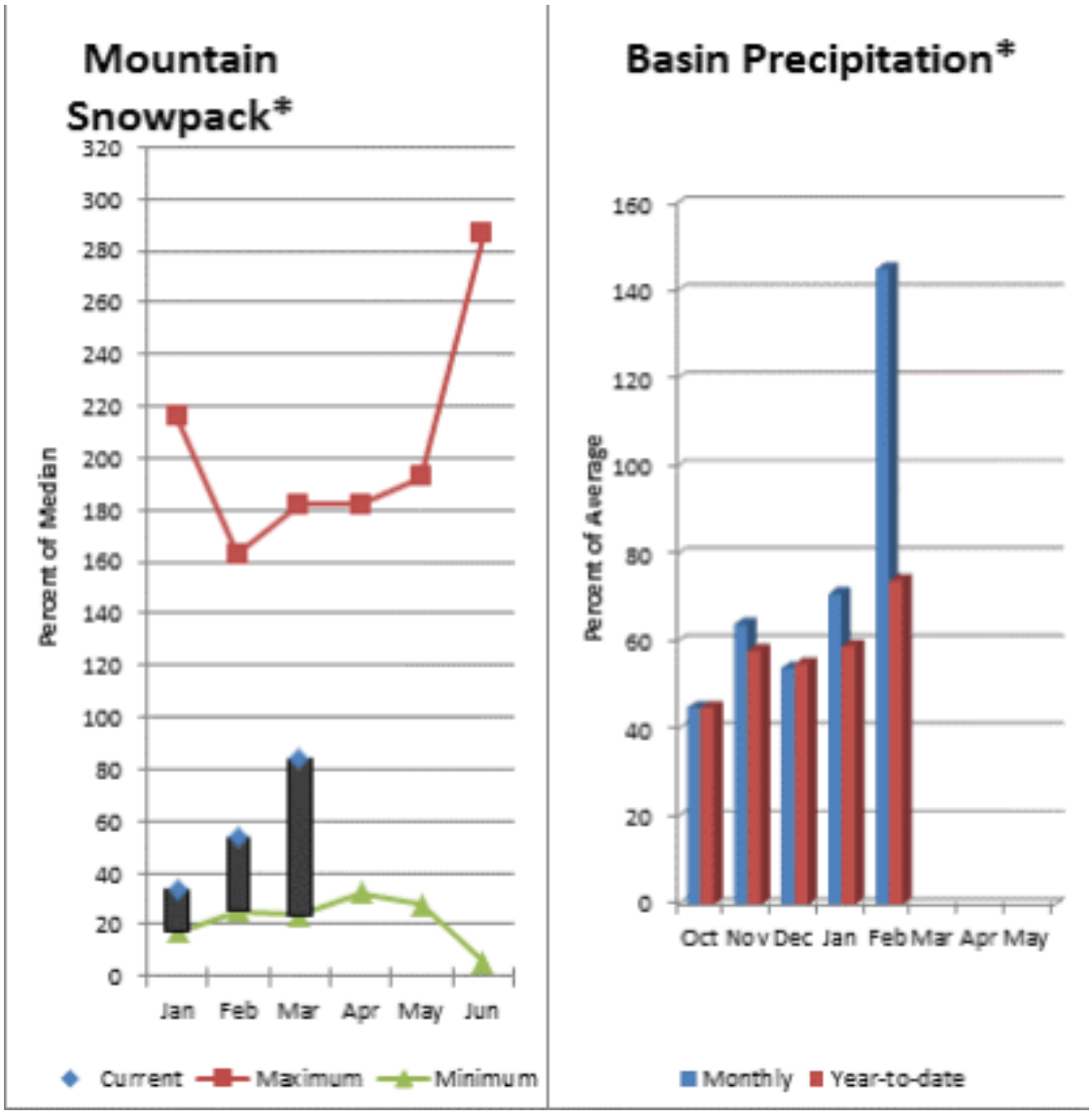
(2) - The value is natural volume - actual volume may be affected by upstream water management.



*Based on selected stations

Forecasts for April – September streamflows within the basin are Lewis River at Ariel, 83% and Cowlitz River at Castle Rock, 96% of average. The Columbia at The Dalles is forecasted to have 100% of average flows this summer according to the River Forecast Center. February average streamflow for Cowlitz River was 115%. The Columbia River at The Dalles was 79% of average. February precipitation was 145% of average and the water-year average was 74%. March 1 snow cover for Cowlitz River was 103%, and Lewis River was 66% of normal. Temperatures were 4-6 degrees below normal during February and 2-4 below normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2014

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Columbia R at The Dalles (2)	APR-JUL	67500	74500	79300	99	84100	91100	79855
	APR-SEP	79200	87400	93000	100	98600	107000	92704
Klickitat R nr Glenwood	APR-JUL	92	106	116	92	126	140	126
	APR-SEP	102	117	128	92	139	154	139
Klickitat R nr Pitt	APR-JUL	345	390	425	98	460	505	435
	APR-SEP	420	475	515	99	555	610	520
Lewis R at Ariel (2)	APR-JUL	545	710	825	85	940	1100	970
	APR-SEP	640	815	935	83	1050	1230	1120
Cowlitz R bl Mayfield Dam (2)	APR-JUL	1060	1310	1480	91	1650	1900	1620
	APR-SEP	1170	1470	1670	91	1870	2170	1840
Cowlitz R at Castle Rock (2)	APR-JUL	1640	1920	2110	95	2300	2580	2230
	APR-SEP	1990	2290	2390	95	2710	3010	2520

LOWER COLUMBIA RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
Swift	0.0			622.5
Yale	0.0			
Merwin	0.0			398.3
Mossyrock Dam (riffe Lk)	0.0			1213.

LOWER COLUMBIA RIVER BASINS
Watershed Snowpack Analysis - March 1, 2014

Watershed	Number of Data Sites	This Year as % of Last Yr	Median
LEWIS RIVER	4	50	66
COWLITZ RIVER	6	80	103

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

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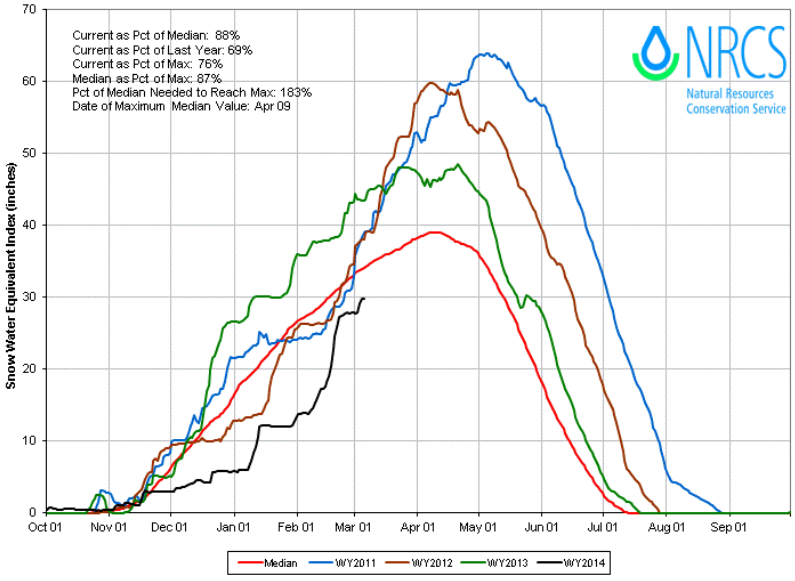
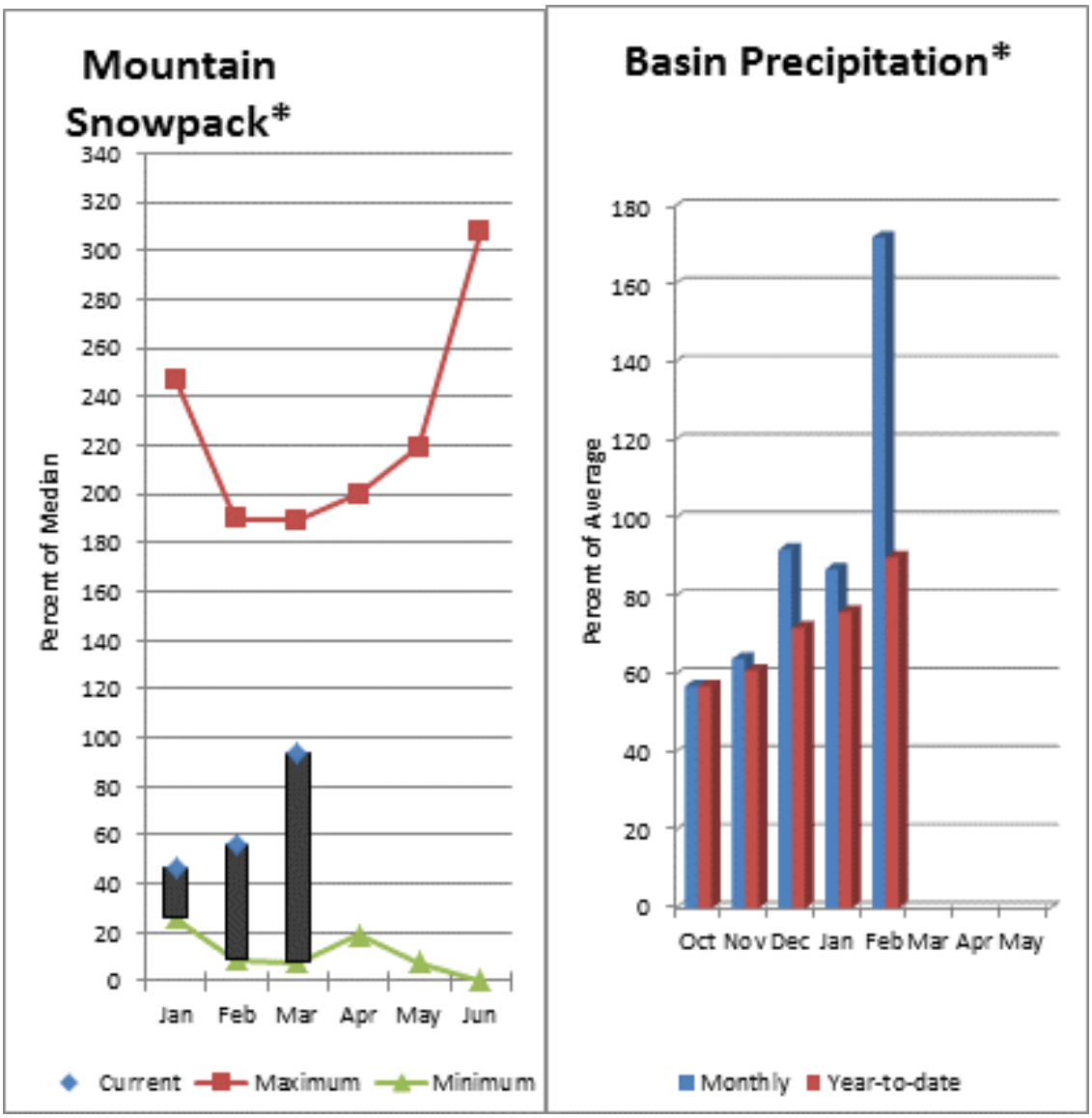
(2) - The value is natural volume - actual volume may be affected by upstream water management.

LEWIS, COWLITZ Time Series Snowpack Summary
Based on Provisional SNOTEL data as of Mar 05, 2014





*Based on selected stations

Summer runoff is forecast to be 88% of normal for the Green River below Howard Hanson Dam and 103% for the White River near Buckley. March 1 snowpack was 105% of average for the White River, 101% for Puyallup River and 75% in the Green River Basin. February precipitation was 172% of average, bringing the water year-to-date to 90% of average for the basins. Average temperatures in the area were 4-6 degrees below normal for February and 2-3 below average for the water-year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2014

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
White R nr Buckley (1)	APR-JUL	330	410	445	103	480	560	430
	APR-SEP	400	490	530	103	570	660	515
Green R bl Howard Hanson Dam (1,2)	APR-JUL	107	174	205	87	235	305	235
	APR-SEP	130	199	230	88	260	330	260

SOUTH PUGET SOUND RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

SOUTH PUGET SOUND RIVER BASINS
Watershed Snowpack Analysis - March 1, 2014

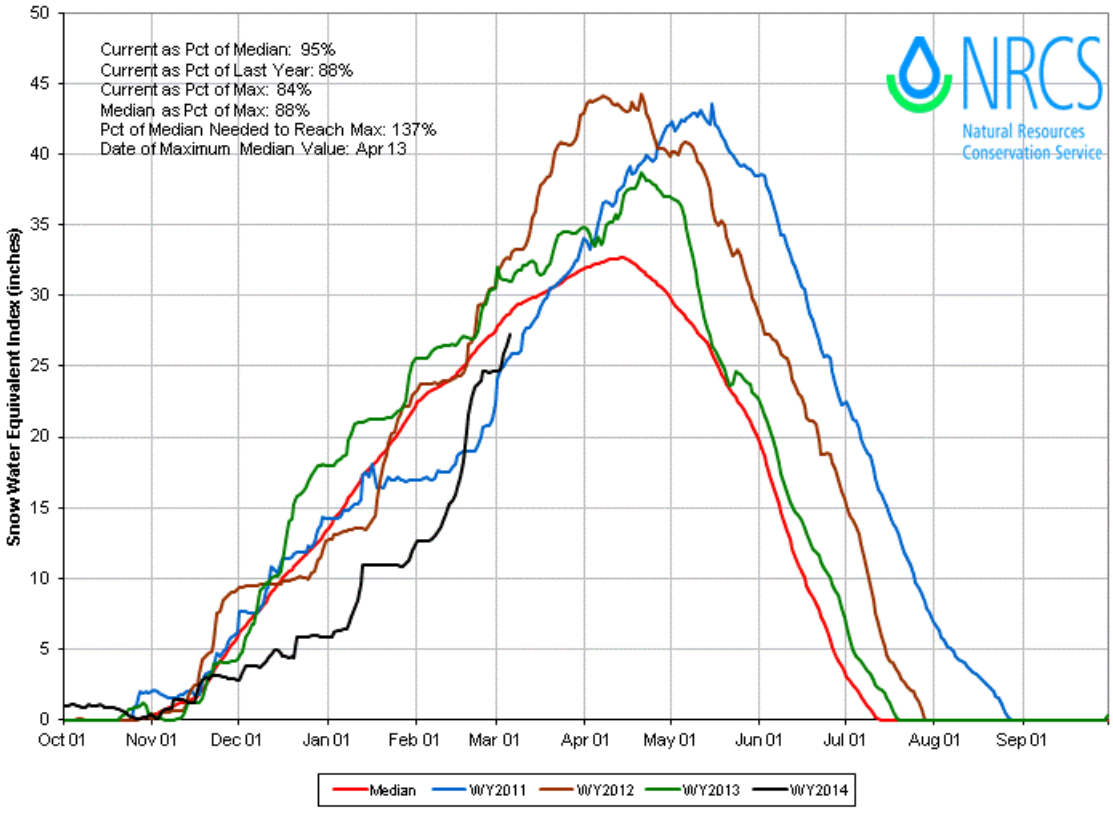
Watershed	Number of Data Sites	This Year as % of Last Yr	Median
WHITE RIVER	3	79	87
GREEN RIVER	2	74	75
PUYALLUP RIVER	5	72	88

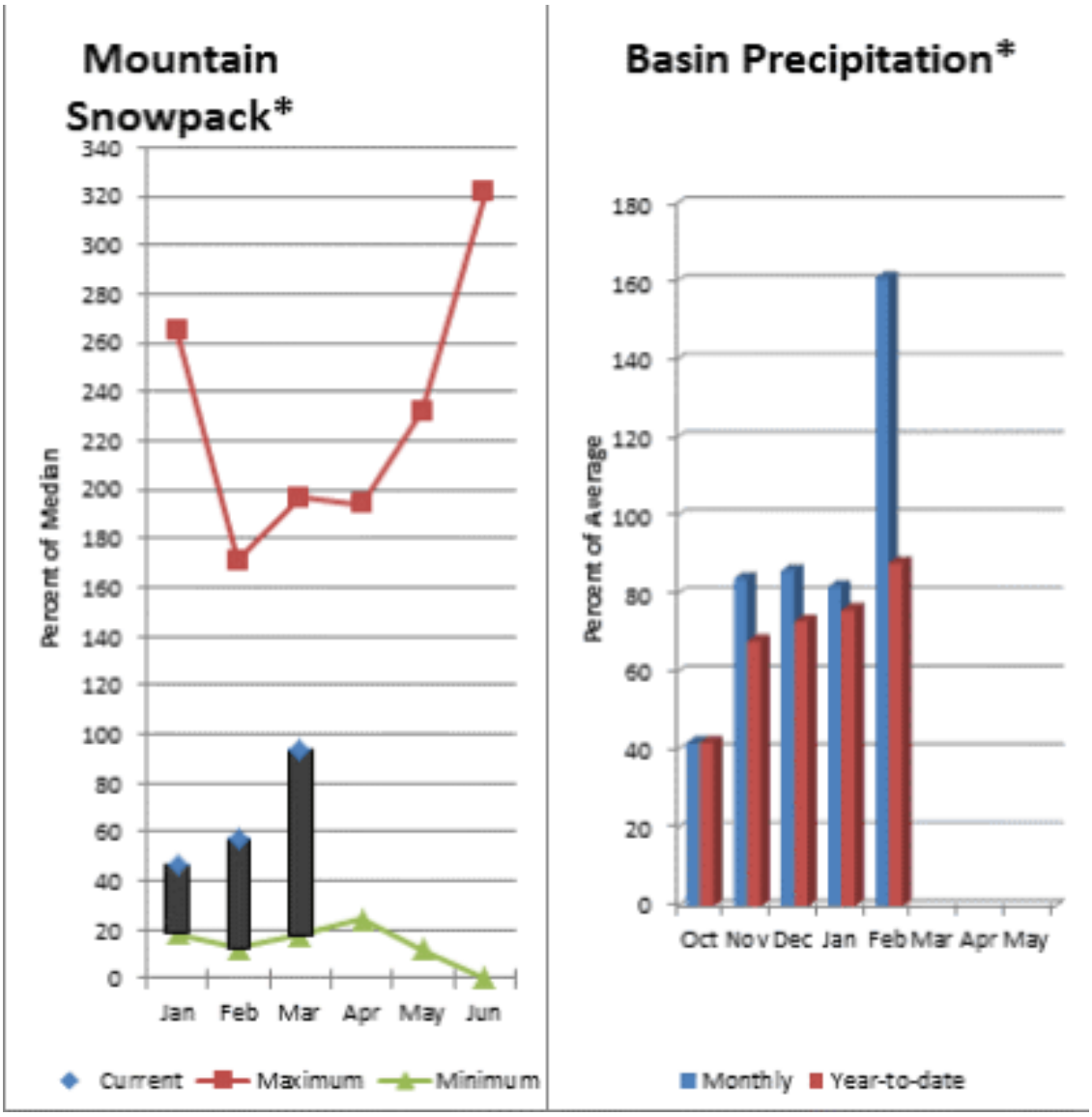
* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

WHITE, GREEN, PUYALLUP Time Series Snowpack Summary
Based on Provisional SNOTEL data as of Mar 05, 2014





*Based on selected stations

Forecast for spring and summer flows are: 99% for Cedar River near Cedar Falls; 100% for Rex River; 109% for South Fork of the Tolt River; and 96% for Taylor Creek near Selleck. Basin-wide precipitation for February was 161% of average, bringing water-year-to-date to 88% of average. March 1 median snow cover in Cedar River Basin was 91%, Tolt River Basin was 98%, Snoqualmie River Basin was 96%, and Skykomish River Basin was 6931%. Temperatures were 4-6 degrees below normal for February and 2-3 below average for the water-year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2014

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Cedar R nr Cedar Falls	APR-JUL	51	61	68	97	75	85	70
	APR-SEP	57	68	75	99	82	93	76
Rex R nr Cedar Falls	APR-JUL	15.9	21	24	100	27	32	24
	APR-SEP	18.7	24	27	100	30	35	27
Taylor Creek nr Selleck	APR-JUL	14.2	17.3	19.3	97	21	24	20
	APR-SEP	17.5	21	23	96	25	28	24
SF Tolt R nr Index	APR-JUL	11.4	13.8	15.4	108	17.0	19.4	14.2
	APR-SEP	13.0	15.7	17.5	109	19.3	22	16.1

CENTRAL PUGET SOUND RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

CENTRAL PUGET SOUND RIVER BASINS
Watershed Snowpack Analysis - March 1, 2014

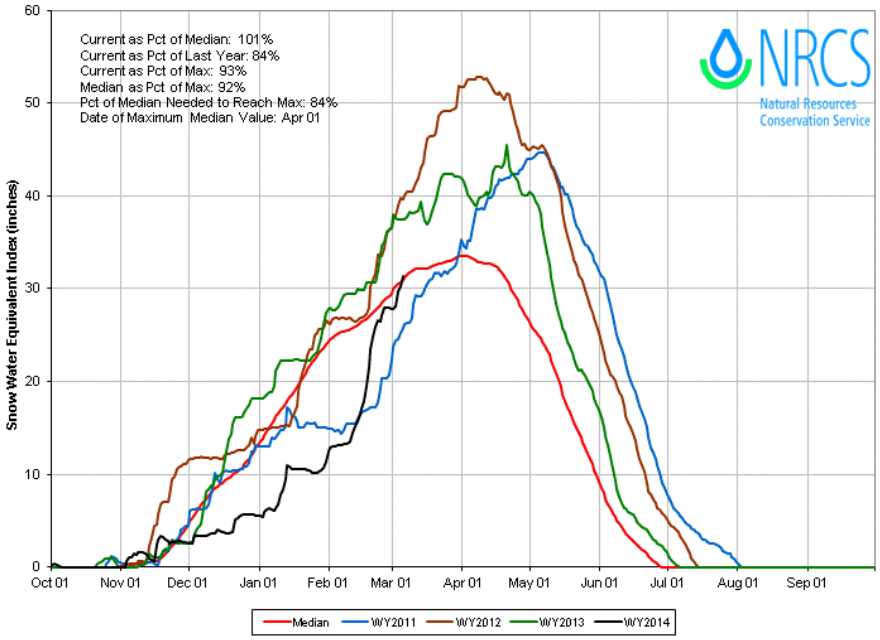
Watershed	Number of Data Sites	This Year as % of Last Yr	Median
CEDAR RIVER	6	70	91
TOLT RIVER	3	59	98
SNOQUALMIE RIVER	5	69	96
SKYKOMISH RIVER	3	65	93

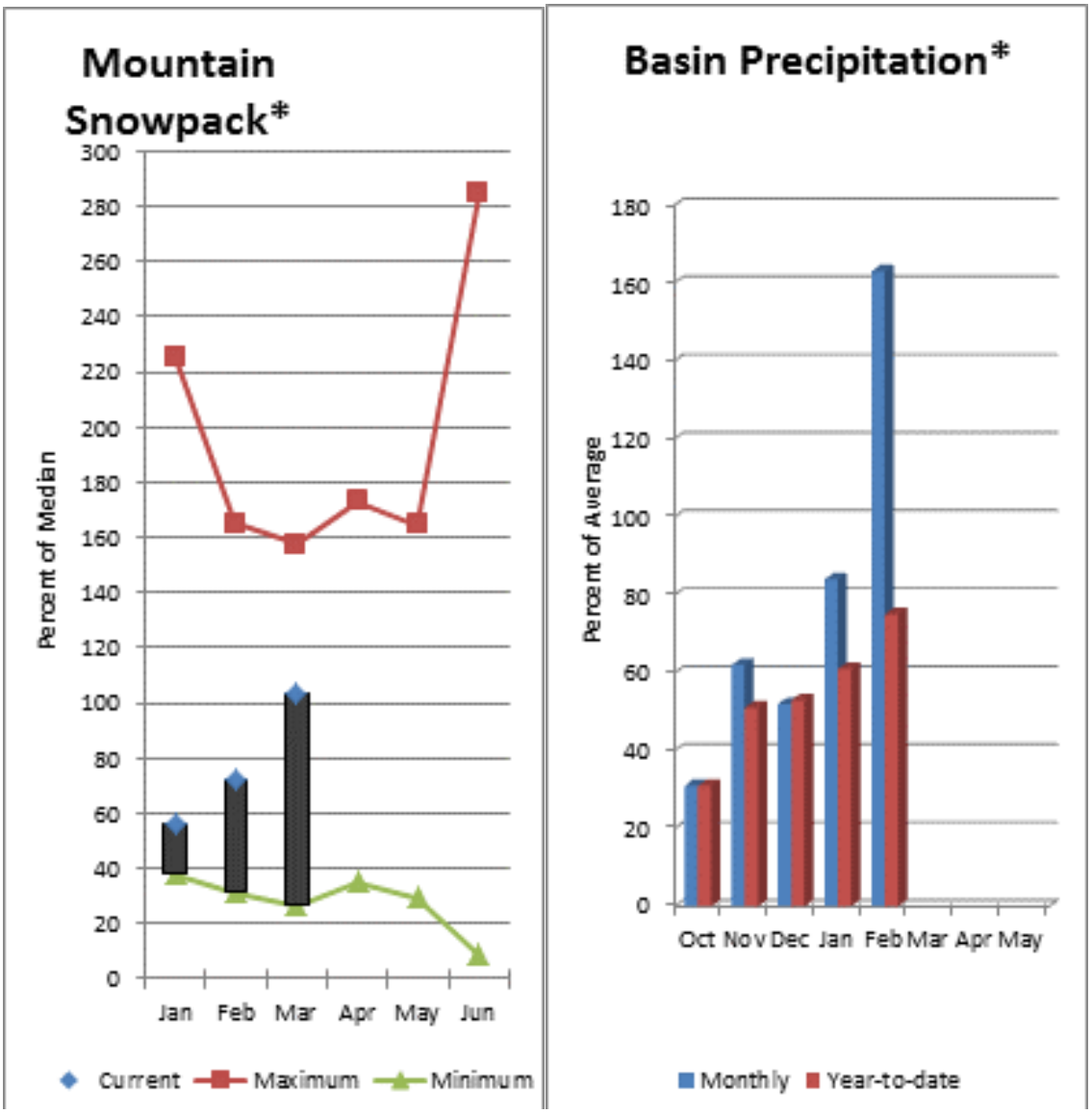
* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

CEDAR, SNOQUALMIE, SKYKOMISH Time Series Snowpack Summary
Based on Provisional SNOTEL data as of Mar 05, 2014





*Based on selected stations

Forecast for Skagit River streamflow at Newhalem is 104% of average for the spring and summer period. February streamflow in Skagit River was 69% of average. Other forecast points included Baker River at 98% and Thunder Creek at 97% of average. Basin-wide precipitation for February was 163% of average, bringing water-year-to-date to 75% of average. March 1 average snow cover in Skagit River Basin was 107%, Nooksack River Basin was 99%. Snow surveys were not available for the Baker River Basin. March 1 Skagit River reservoir storage was 5432% of average and 41% of capacity. Average temperatures were 4-6 degrees below normal for February and 1-2 below for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2014

Forecast Point	Forecast Period	Drier 90% (1000AF)	Drier 70% (1000AF)	Future Conditions 50% (1000AF)	50% (% AVG.)	Wetter 30% (1000AF)	Wetter 10% (1000AF)	30-Yr Avg. (1000AF)
Thunder Ck nr Newhalem	APR-JUL	197	215	230	98	245	265	235
	APR-SEP	280	305	320	97	335	360	330
Skagit R at Newhalem	APR-JUL	1540	1690	1790	107	1890	2040	1680
	APR-SEP	1840	2010	2120	104	2230	2400	2030
Baker R At Concrete	APR-JUL	595	695	765	98	835	935	780
	APR-SEP	760	880	965	98	1050	1170	980

NORTH PUGET SOUND RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
Ross	1404.	451.0	244.5	832.4
Diablo Reservoir	90.6		86.0	86.2

NORTH PUGET SOUND RIVER BASINS
Watershed Snowpack Analysis - March 1, 2014

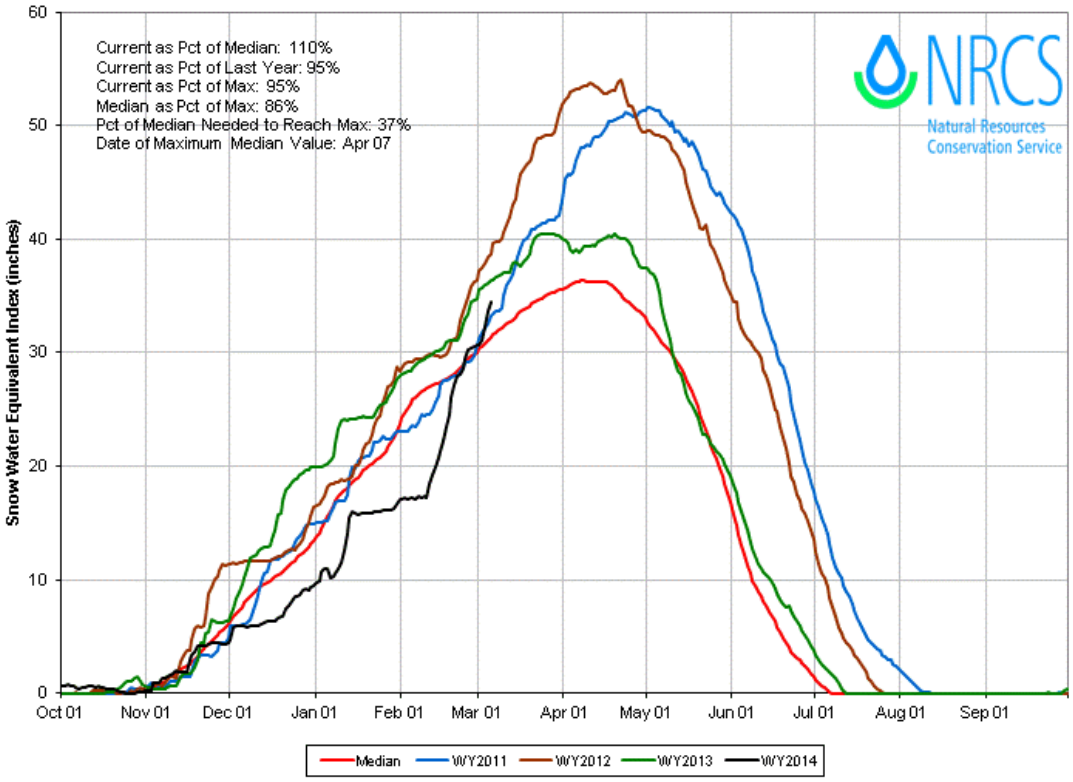
Watershed	Number of Data Sites	This Year as % of Last Yr	This Year as % of Median
SKAGIT RIVER	13	101	108
BAKER RIVER	0		
NOOKSACK RIVER	2	76	99

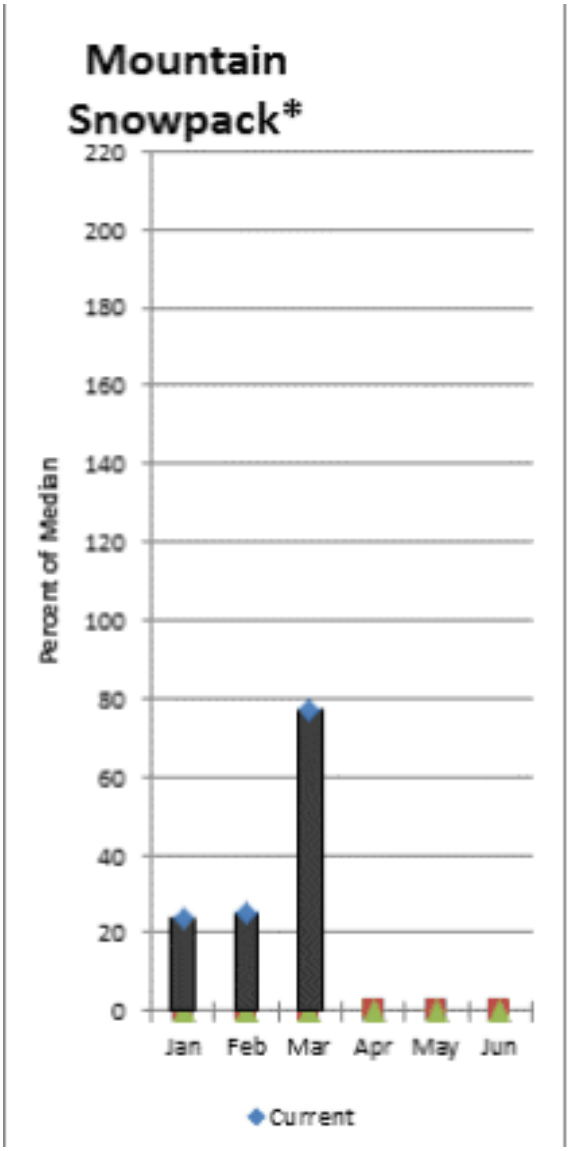
* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

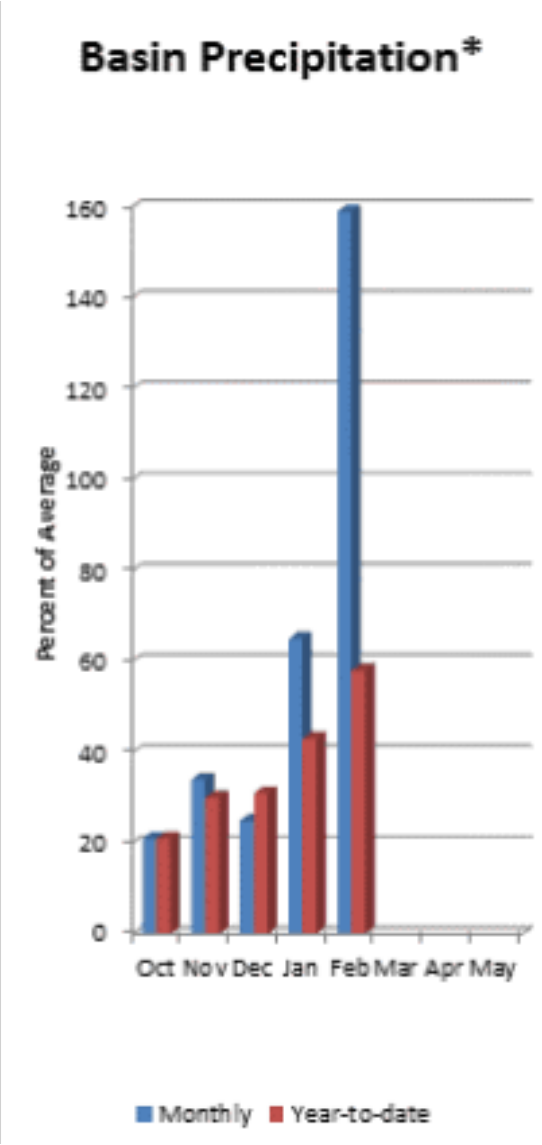
The average is computed for the 1981-2010 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

BAKER, SKAGIT, NOOKSACK Time Series Snowpack Summary
Based on Provisional SNOTEL data as of Mar 05, 2014







*Based on selected stations

Forecasted average runoff for streamflow for the Dungeness River is 90% and Elwha River is 91%. February runoff in the Dungeness River was 65% of normal. Big Quilcene and Wynoochee rivers may expect near to slightly below average runoff this summer as well. February precipitation was 159% of average. Precipitation has accumulated at 58% of average for the water year. February precipitation at Quillayute was 10.64 inches. The 1981-2010 average for February is 10.35 inches. Olympic Peninsula snowpack was still disappointing at 77% of normal on March 1. Temperatures were 2-4 degrees below average for February and close to normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2014

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Dungeness R nr Sequim	APR-JUL	86	99	108	90	117	130	120
	APR-SEP	103	120	131	90	142	159	145
Elwha R at Mcdonald Bridge	APR-JUL	295	335	365	91	395	435	400
	APR-SEP	340	395	430	91	465	520	470

OLYMPIC PENINSULA RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

OLYMPIC PENINSULA RIVER BASINS
Watershed Snowpack Analysis - March 1, 2014

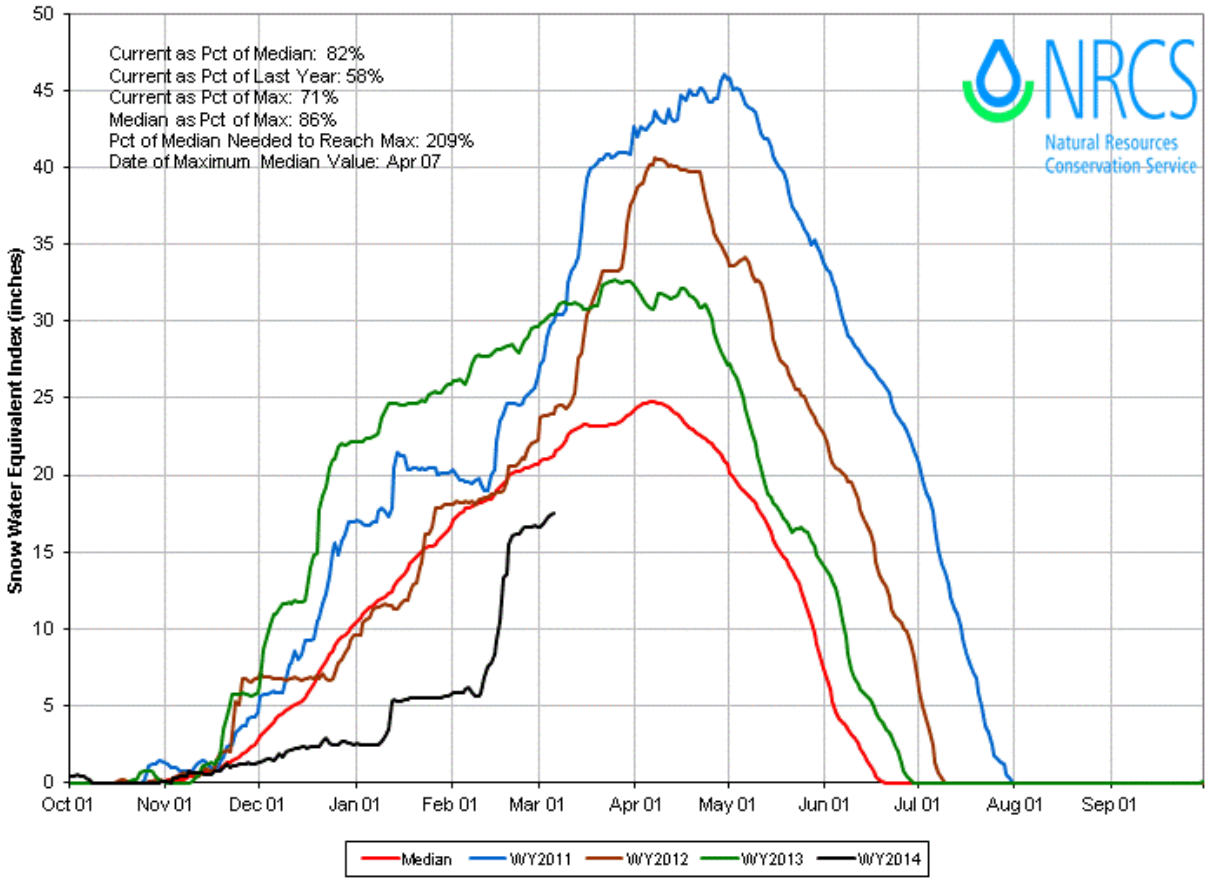
Watershed	Number of Data Sites	This Year as % of Last Yr	Median
OLYMPIC PENINSULA	6	54	77

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

OLYMPIC Time Series Snowpack Summary
Based on Provisional SNOTEL data as of Mar 05, 2014



Issued by

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Chief
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Released by

Roylene Rides At The Door
State Conservationist
Natural Resources Conservation Service
Spokane, Washington

The Following Organizations Cooperate with the Natural Resources Conservation Service in Snow Survey Work*:

Canada	Snow Survey Network Program – British Columbia Ministry of Environment
	River Forecast Center – British Columbia Ministry of Forests, Lands and Natural Resource Operations
State	Washington State Department of Ecology
	Washington State Department of Natural Resources
Federal	Department of the Army
	Corps of Engineers
	U.S. Department of Agriculture
	Forest Service
	U.S. Department of Commerce
	NOAA, National Weather Service
	U.S. Department of Interior
	Bonneville Power Administration
	Bureau of Reclamation
	Geological Survey
	National Park Service
	Bureau of Indian Affairs
	Recourse Conservation & Development Councils
Local	City of Tacoma
	City of Seattle
	Chelan County P.U.D.
	Pacific Power and Light Company
	Puget Sound Energy
	Washington Water Power Company
	Snohomish County P.U.D.
	Colville Confederated Tribes
	Spokane County
	Yakama Indian Nation
	Whatcom County
	Pierce County
	Kalispel Tribe of Indians
	Spokane Indian Tribe
	Jamestown S'klallum Tribe
Private	Okanogan Irrigation District
	Wenatchee Heights Irrigation District
	Newman Lake Homeowners Association
	Whitestone Reclamation District

***Other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.**

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Washington Water Supply Outlook Report

Natural Resources Conservation Service
Spokane, WA